DOCUMENT RESUME

ED 399 703 EC 305 034

AUTHOR	Corbett, Sandra L.; Ross-Thomson, Betty
TITLE	Educating Students with Traumatic Brain Injuries: A Resource and Planning Guide.
INSTITUTION	Wisconsin State Dept. of Public Instruction, Madison.
REPORT NO	ISBN-1-57337-0312
PUB DATE	96
NOTE	177p.
AVAILABLE FROM	Wisconsin Department of Public Instruction, Drawer 179, Milwaukee, WI 53293-0179; 800-243-8782.
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC08 Plus Postage.
DESCRIPTORS	Cognitive Processes; Disability Identification; *Educational Strategies; Elementary Secondary Education; Empowerment; Family Relationship; Federal Legislation; *Head Injuries; *Individualized Education Programs; Injuries; Intervention; Needs Assessment; *Neurological Impairments; Occupational Therapy; Physical Therapy; *Reentry Students; Speech Therapy; Student Adjustment; *Student Needs
IDENTIFIERS	Behavior Management

ABSTRACT

This resource and planning guide provides a framework for practitioners to create an effective educational program for students with traumatic brain injuries. Chapters 1 and 2 provide an overview of brain injuries including information on brain physiology, types of brain injuries, and differences by age. Chapter 3 discusses returning to school, home, and the community after a brain injury. Chapter 4 provides information on screening, referrals, and determination for special education. It also includes information on developing an individualized education program (IEP). Chapter 5 discusses the assessment of educational needs, including assessment goals, planning the assessment, choosing assessment methods, interpreting results, and re-evaluation. Chapter 6 describes components that should be addressed in individualizing an education program, including physical abilities, cognitive abilities, academic activities, and nonacademic activities. Chapter 7 discusses behavior management from understanding underlying factors to designing behavioral interventions and implementing behavior management strategies. Chapter 8 presents material on providing physical, occupational, and speech and language therapy. Chapter 9 discusses empowering the family and relationships with siblings and peers. Chapter 10 focuses on preventing injuries and identifying remedies. Chapter 11 includes appendices on federal legislation definitions, measures of consciousness, and a tip sheet on parental preparation for IEP Meetings. An extensive resource list of materials and organizations is provided. (Individual chapters contain references.) (CR)

ED 399 703

EDUCATING STUDENTS WITH TRAUMATIC BRAIN INJURIES

A Resource and Planning Guide

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
● Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Wisconsin Department of Public Instruction

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
GM Doyle
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

BEST COPY AVAILABLE

Educating Students with Traumatic Brain Injuries: A Resource and Planning Guide

Sandra L. Corbett
Consultant
Physical Therapy

Betty Ross-Thomson
Consultant, Retired
Orthopedically Impaired and Other Health-Impaired Programs

Wisconsin Department of Public Instruction
Madison, Wisconsin

This publication is available from:

Publication Sales
Wisconsin Department of Public Instruction
Drawer 179
Milwaukee, WI 53293-0179
(800) 243-8782

Bulletin No. 96304

© 1996 Wisconsin Department of Public Instruction

ISBN 1-57337-0312

The Wisconsin Department of Public Instruction does not discriminate on the basis of sex, race, religion, age, national origin, ancestry, creed, pregnancy, marital or parental status, sexual orientation, or physical, mental, emotional, or learning disability.

Printed on
Recycled Paper

Contents

Foreword v
Acknowledgments vii

1 Introduction 1

2 Understanding the Injury
Brain Physiology 5
Types of Brain Injuries 6
Assessing Brain Injury 11
Mild Traumatic Brain Injury 11
Moderate and Severe Traumatic Brain Injury 13
Differences by Age 17

3 Returning to School
Bridging Systems 21
Returning Home 23
Returning to the Community 24

4 Planning A Special Education
Screening 29
Referrals 30
Determination 31
Developing an Individualized Education Program 33

5 Assessing Educational Needs
Assessment Goals 39
Planning the Assessment 40
Choosing Assessment Methods 42
Adapting Standardized Measures 46
Interpreting Results 46
Reporting Results 50
Re-evaluation 50

6 Individualizing an Education Program
Physical Abilities 51
Cognitive Abilities 55
Academic Activities 59
Nonacademic Activities 59

7 Managing Behavior
Understanding Underlying Factors 66
Designing Behavioral Interventions 68
Behavior Management Strategies 71
Closing Comments 76

8 Providing Therapy
Physical 85
Occupational 88
Speech and Language 91

9 A Family Affair
New Responsibilities 98
Empowering the Family 100
Siblings 101
Peers 102

10 Preventing Injuries
Assessing Risks 105
Identifying Remedies 106
Summary 110

11 Appendixes
A. Federal Legislation 114
B. Measures of Consciousness 115
C. Policy Bulletins, Exceptional Education 118
D. Wisconsin Administrative Codes 135
E. Parent Preparation for IEP Meetings 143

12 Resources 145

13 Glossary 167

Foreword

The student who has experienced a period of normal development that is suddenly interrupted by brain injury presents unique challenges to schools.

The collaboration of educators with medical personnel and the family is critical in understanding the results of the injury on the child and re-entry into school. Assessment, educational programming, behavioral management, and therapeutic interventions need to be adjusted and adapted to effectively evaluate and serve the student with a traumatic brain injury. This is clearly an example of the Village Partnership and the concept that it takes a whole village to raise a child.

I believe this resource and planning guide will be a framework for educators, administrators, therapists, and other school staff members to build upon creating an effective educational program for students with traumatic brain injuries.

John T. Benson
State Superintendent

Acknowledgments

This publication is the result of a vision shared by a group of educators, parents, health care providers, and administrators. They envisioned helping school districts to educate and to serve children with traumatic brain injuries more effectively. This group developed the outline for the guide and provided the content. We sincerely appreciate and acknowledge the time, work, and persistence of this committee of writers and consultants.

Contributors

Ann Bruhn
Physical Therapist
University of Wisconsin Hospital and Clinics
Madison, Wisconsin

Marge Flynn
Speech Pathologist
Meriter Hospital
Madison, Wisconsin

Craig Jordan
Rehabilitation Counselor and survivor of a traumatic brain injury
New London, Wisconsin

Edel Logan
School Occupational Therapist
Monroe School District
Monroe, Wisconsin

Julia McGivern
Psychologist
University of Wisconsin-Madison
Madison, Wisconsin

Deborah McLeish
Medical Director, Pediatric Rehabilitation Program
University of Wisconsin Hospital and Clinics
Madison, Wisconsin

Dave W. Medearis
Program Support Teacher
Madison Metropolitan School District
Madison, Wisconsin

Marlene Miller
Coordinator of Pediatric Specialty Clinics
Marshfield Children's Pediatric Specialty Clinics
Marshfield, Wisconsin

Jane Megan Powers
Director, Occupational Medicine
University of Wisconsin Hospital and Clinics
Madison, Wisconsin

Penny Reed
Educator, Director
Wisconsin Assistive Technology Initiative
Amherst, Wisconsin

Linda Shepard
Parent of a survivor of traumatic brain injury
Downing, Wisconsin

Sonja Stoffels
Consultant, Brain Injury Programs
Department of Health and Social Services
Madison, Wisconsin

Fred Theye
Pediatric Neuropsychologist
Marshfield Clinic
Marshfield, Wisconsin

Roy Thomas
Assistant Director of Special Education
Monroe School District
Monroe, Wisconsin

Dan Walvig
School Psychologist
Wisconsin Rapids School District
Wisconsin Rapids, Wisconsin

Joel Wish
Director of Health Psychology
University of Wisconsin Hospital
and Clinics
Clinical Associate Professor
Department of Rehabilitation Medicine
Madison, Wisconsin

Staff Contributors

Division of Learning Support: Equity and Advocacy

Juanita Pawlisch
Assistant Superintendent

Paul Halverson, Director
Divisionwide Budget and Data Management

Lynn A. Boreson, Consultant
Emotionally Disturbed Programs

Patricia A. Bober, Consultant
Occupational Therapy

Cindy Ericksen, Consultant
School Nursing and Health Services

Jack Frye-Osier, Consultant
School Administration

Ann Kellogg, Consultant
Transition

Andrew Papinew, Consultant
Visually Handicapped Programs

Carol Schweitzer, Consultant
Educational Interpreters and Hard of
Hearing Programs

Elliot V. Weiman, Consultant
School Administration

Division for Libraries and Community Learning

Lisa Hildebrand, Text Editor
Kathleen Thompson, Text Editor
Brian Lavendel, Proofreader
Victoria Horn, Graphic Artist
Neldine Nichols, Photographer
Heather Lins, Management Information Technician

Finally, we thank the Verona Area School District for providing a classroom for the cover photo. Students in the cover photo are (left to right) Michael Frankey, Sophia Rahman, Dan Ruth, and Laureen Devries.

Copyrighted Materials

Every effort has been made to ascertain proper ownership of copyrighted materials and to obtain permission for their use. Any omission is unintentional.

Introduction 1

The number of children surviving traumatic brain injuries and returning to school following such injuries has increased dramatically during the past decade.

The various definitions of traumatic brain injury, along with many other factors, hinder accurately estimating the number of people affected by traumatic brain injury. However, most professionals estimate that 200 of every 100,000 children and adolescents will require hospitalization each year due to brain injury (Blosser, 1994).

While specific numbers are difficult to obtain, most educators and other professionals agree that traumatic brain injury is the leading cause of death and disability in children and adolescents in the United States. Most also agree that at least twice as many boys as girls experience traumatic brain injuries, and most traumatic brain injuries occur in middle to late adolescence (Savage and Wolcott, 1994; Begali, 1992).

The predominant cause of brain injury varies according to the age and developmental stage of the child. For infants, the most common cause of traumatic brain injury is abuse or neglect; for toddlers and preschoolers, abuse and falls; for early elementary school children, falls and pedestrian-motor vehicle accidents; for late elementary and middle school students, pedestrian-bicycle accidents, pedestrian-motor vehicle accidents, and sports; and for high school students, motor vehicle accidents (Savage and Wolcott, 1994).

Sports-related brain injuries may occur from accidents involving bicycles, skateboards, baseball bats, contact sports, in-line skating, snowmobiling, and horseback riding. Each year, more than 300,000 emergency room visits nationwide are due to bicycle-related accidents (Dean Medical Center, 1990); and football injuries account for more than 250,000 concussions in the United States (Cantu, 1994). It is estimated that 20 percent of high school football players suffer a concussion during a single football season, some more than once (Bailes, 1994).

Medical and technological advances have increased the likelihood that a person who sustains a brain injury will survive. However, as the number of survivors increases so too does the need for specialized programs and services.

In turn, public schools are called upon with growing frequency to work with children with traumatic brain injuries and the families of such children.

Many times, a traumatic brain injury thrusts the student, family, and educators into an intense and dramatically altered relationship. Just as the family of a child with a traumatic brain injury most often has had little, if any, experience with the special education process, many educators have had few experiences with students with traumatic brain injury. This must change, as frequently a traumatic brain injury creates the need for a special education for the child who is injured.

The special education process involves building a partnership with the families of children who have exceptional educational needs such as those needs created by a traumatic brain injury. Building such a partnership with the family of a child who has suffered a traumatic brain injury represents a unique challenge—a challenge and an opportunity unlike any that school personnel have encountered before. The parents of children with most other types of handicapping conditions and disabilities usually have adjusted to their situation by the time the child enters school. In contrast, the families of children who suffer moderate to severe traumatic brain injuries may not adjust for many months, or years, following the injury.

At the same time, school personnel are quite familiar with other handicapping conditions and disabilities (for example, learning disabilities and orthopedic impairments). However, federal and state special education laws have been amended only recently to include traumatic brain injury. The child who is discharged from the medical facility following a traumatic brain injury is in many ways a stranger to family members, school personnel, and peers. Just as family members had come to know the child during a period of many years before the traumatic brain injury, so, too, had teachers and peers. When a child with a traumatic brain injury returns to the community and school, family members and friends may have had little time to become familiar with the child and his or her impairments from the traumatic brain injury.

Most often, much of the recovery from a moderate or severe traumatic brain injury will occur after the child has returned to school. Unlike children with other handicapping conditions, a child with a traumatic brain injury is frequently placed back into the community long before the child, the community, the school, and the family are ready. The reasons for this are many, including

- changes in health care reimbursement patterns, which have resulted in shorter hospital stays;
- circumstances requiring family members to return home; and
- the wider availability of occupational therapists, physical therapists, and speech and language pathologists within communities, not just medical centers.

Because they return to school quickly, much of the recovery for children with traumatic brain injuries occurs within the school setting. Most medical personnel will agree that 90 percent of the recovery experienced by the child with a moderate to severe traumatic brain injury occurs within the first two years following the injury.

The early phase of recovery from traumatic brain injury is most often characterized by stair-step progression, with periods of rapid gains followed by plateaus. The rapidity with which these changes in central nervous system function occur is unprecedented within the typical classroom, where academic skills are usually acquired on a much more gradual and predictable basis. Although educators are regularly asked to evaluate growth or changes in skill levels in their students, evaluating the child who has suffered a traumatic brain injury causes difficulties for the classroom teacher.

The development of a child with a traumatic brain injury originates from three separate, yet interdependent, forces: first, those changes due to recovery of the brain; second, growth that occurs in the process of normal maturation; and third, those changes that develop in the course of learning new skills.

Educators and others helping to reintegrate the student into the school and community must acknowledge the evolving nature of the child's and the family's adjustment to the traumatic brain injury. This guide is designed to ease this adjustment.

References

Bailes, J. "Head Injury in Athletes." In *Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC: National Athletic Trainers' Association Research and Education Foundation, April 16-18, 1994, pp. 6-12.

Begali, V. *Head Injury in Children and Adolescents: A Resource and Review for School and Allied Professionals.* 2nd ed. Brandon, VT: Clinical Psychology Publishing Co., 1992.

Blosser, Jean. *Pediatric Brain Injury: Proactive Intervention.* San Diego, CA: Singular Publishing Group, 1994.

Cantu, R. "Minor Head Injuries in Sports." In *Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC: National Athletic Trainers' Association Research and Education Foundation, April 16-18, 1994, pp. 17-30.

Dean Medical Center. "Crash Helmet: Teaching Important Lessons in a Gentle Manner." *Caring for You.* July 1990, Madison, WI: Dean Medical Center.

Savage, Ronald C., and Gary F. Wolcott. Eds. *Educational Dimensions of Acquired Brain Injury.* Austin, TX: PRO-Ed, Inc., 1994.

Understanding the Injury 2

The Brain Injury Association, Inc., which was established in 1980, defines brain injury as "a traumatic insult to the brain capable of producing physical, intellectual, emotional, social, and vocational changes." This definition points out the potential functional deficits associated with injuries to the brain.

Medical professionals often classify traumatic brain injury based on factors such as the duration of coma or the presence of skull fractures or bleeding, but these classifications may not accurately reflect the functional outcome, which is of primary concern to educators.

This guide will, at times, use medical and educational terminology to refer to the conditions of the student with a traumatic brain injury. The terms are defined in the glossary.

Both federal and state law consider a traumatic brain injury a handicapping condition. Since 1992, the federal Individuals with Disabilities Education Act (IDEA) has included traumatic brain injury as one of 13 specified disabilities. In 1995, Wisconsin's legislature and governor amended Wisconsin Statute 115.76(3) to include traumatic brain injury as a handicapping condition and amended the state's administrative code to conform to statutory language. That administrative code, which took effect May 1, 1995, reads as follows:

> PI 11.35(2)(j) Traumatic brain injury. 1. Traumatic brain injury means an acquired injury to the brain caused by an external physical force resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; speech and language; memory; attention; reasoning; abstract thinking; communication; judgment; problem solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and executive functions, such as organizing, evaluating, and carrying out goal-directed activities. The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma.
>
> 2. Children whose educational performance is adversely affected as a result of acquired injuries to the brain caused by internal occurrences, such as vascular accidents, infections, anoxia, tumors, metabolic disorders, and the effects of toxic substances, or degenerative conditions may meet the criteria of one of the other handicapping conditions under this section, such as other health impairment, learning disability, or multiple handicapped.
>
> 3. The results of standardized and norm-referenced instruments used to evaluate and identify a child under this paragraph may not be reliable or valid. Therefore, alternative means of evaluation, such as criterion-referenced assessment, achievement assessment, observation, work samples, and neuropsychological assessment data, shall be considered to identify a child who exhibits total or partial functional disability or psychosocial impairment in one or more of the areas described under subd. 1.

> 4. Before a child may be identified under this paragraph, available medical information from a licensed physician shall be considered.

The definitions of traumatic brain injury in the IDEA (see Appendix A) and the Wisconsin Administrative Code are essentially the same. However, for the purposes of this guide, traumatic brain injury is defined according to PI 11.35(2)(j), Wis. Admin. Code.

In addition, traumatic brain injury may be identified under the eligibility criteria for "other health impairment" in PI 11.35(2)(k), which in 1995 was amended to include acquired injuries to the brain caused by internal occurrences or degenerative conditions. PI 11.35(2)(k) now says "other health impairment means having limited strength, vitality or alertness, due to chronic or acute health problems. The term includes but is not limited to a heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning, leukemia, diabetes, or acquired injuries to the brain caused by internal occurrences or degenerative conditions, which adversely affects a child's educational performance."

For example, a child may have a stroke, which can cause brain injury. The actual impact on the brain, and on the child, may be similar to that which occurs with external trauma. This child would not qualify for special services using the traumatic brain injury criteria, although the child may qualify for special services using the "other health impairment" category.

PI 11.35(2)(k), Wis. Admin. Code, addresses acquired injuries to the brain caused by internal occurrences or degenerative conditions for a number of reasons.

- Children who have an internal cause of brain injury may have sequelae or aftereffects similar to children with brain injuries from external occurrences. Each child experiences a period of typical development prior to injury.
- The student with a traumatic brain injury, whether the injury resulted from an internal or an external occurrence, demonstrates a profile of preserved abilities as well as disabilities.
- Assessing brain injuries is similar, whether the injuries are from internal or external occurrences.
- The educational programming needs of children with both internal and external injuries are similar. In either case, the student with a traumatic brain injury will recover abilities following injury at an unpredictable, individual rate, requiring frequent review of progress to ensure appropriate educational programming.
- The disabilities, abilities, and needs of children with brain injuries from internal causes more closely resemble those of children with brain injuries from external causes than those of children served under other categorical areas.
- The student with a traumatic brain injury as a result of internal or external causes will experience psychosocial and specific cognitive limitations not seen in other handicapping conditions. For example, these might include difficulty understanding and accepting deficits resulting from the brain injury and difficulty planning and organizing goal-directed activities (executive functions).

Subtle differences in laws may result in different services and programming, depending on the provider. School districts in Wisconsin use one definition and set of eligibility criteria for services, while social service agencies may use another. A child is identified as brain injured according to the Wisconsin Department of Health and Social Services (DHSS) if the child's injury is due to external causes (such as trauma) or internal occurrences (such as vascular accident, infection, anoxia, tumor, metabolic disorder, and the effects of toxic substances). Although a child with internal occurrences is not identified as brain-injured according to the Department of Public Instruction's definition (PI 11.35(2)(j)), the child may qualify for special school services under categories such as "other health impairment."

The DHSS uses sec. 51.01(2)(g), Wis. Stats., for its definition of brain injury.

> 51.01(2)(g)(a) "Brain injury" means any injury to the brain, regardless of age at onset, whether mechanical or infectious in origin, including brain trauma, brain damage and traumatic head injury, the results of which are expected to continue indefinitely, which constitutes a substantial handicap to the individual, and which directly results in any two or more of the following:
>
> 1. Attention impairment.
> 2. Cognition impairment.
> 3. Language impairment.
> 4. Memory impairment.
> 5. Conduct disorder.
> 6. Motor disorder.
> 7. Any other neurological dysfunction.
>
> (am) "Brain injury" includes any injury to the brain under par. (a) that is vascular in origin if received by a person prior to his or her attaining the age of 22 years.

(b) "Brain injury" does not include alcoholism, Alzheimer's disease as specified under sec. 46.87(1)(a) or the infirmities of aging as specified under sec. 55.01(3).

The difference between the Department of Public Instruction's (DPI) definition of traumatic brain injury and the DHSS's definition of brain injury also means some children with traumatic brain injury who receive services in public schools may not qualify for services from the DHSS. Conversely, some children with traumatic brain injury who do not qualify for special education may be eligible for services through the DHSS. School district personnel must recognize this inconsistency in definitions of traumatic brain injury among agencies, especially when considering transition services for children (see Chapter 4).

Brain Physiology

To effectively work with a student who has sustained a brain injury and his or her family, school personnel must have basic knowledge about the brain and familiarity with medical and rehabilitation terminology. By knowing the side and site(s) of damage, medical and school personnel can better anticipate and understand the physical, psychosocial, and cognitive difficulties that may occur when a child sustains a brain injury.

The soft, gelatin-like brain weighs about three pounds and is composed of billions of interconnecting fibers, each thinner than a strand of a spider's web. The brain is bathed in cerebrospinal fluid, surrounded by protective membranes (meninges), and encased in the rough and bony skull. The cerebrospinal fluid, produced within four fluid-filled ventricles in the brain, cushions the brain and provides some protection from injury.

The brain is somewhat spherical in shape and consists of two hemispheres connected by the corpus callosum. In general, the left hemisphere of the brain controls the right side of the body (for example, the right arm and right leg), and the right hemisphere controls the left side of the body. This arrangement, which is called contralateral control, facilitates preliminary assessment of brain injury. For example, if the right side of the body is paralyzed, the left side of the brain may be damaged.

In most individuals, the left (often called "dominant") hemisphere is responsible for right-sided motor function, receptive and expressive language, and processing of details.

Some of the key functional deficits that can result from left cerebral damage include

- motor and sensory impairment (weakness) in the right side of the body (right hemiplegia or hemiparesis),
- decreased performance on verbal and mathematical intelligence,
- partial or complete loss of language (with associated difficulty reading or understanding the written or spoken word),
- impaired memory, particularly for verbal and auditory information,
- difficulty processing details, and
- "neglect" or decreased awareness of stimuli on the right side.

The right side of the brain is responsible for left-sided motor function, analysis of patterns (the gestalt or big picture), and configurational processing. Some of the key functional deficits that can result from right cerebral damage include

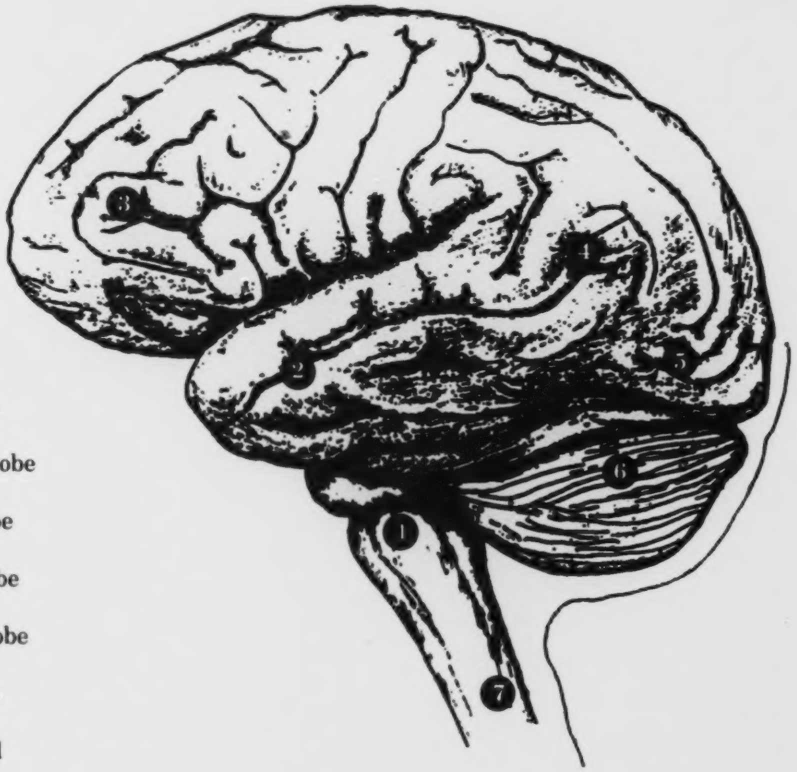
- motor and sensory impairment on the left side of the body (left hemiplegia or hemiparesis),
- deficits in visual-spatial and perceptual-motor skills, including drawing, artistic, and musical abilities,
- difficulty recognizing familiar faces,
- lack of awareness of one's own impairments and safety risks,
- decreased understanding of nonverbal aspects of speech (such as intonation, melody, timbre, and emotional aspects of language),
- decreased attention to objects presented to the person's left side (for example, when reading, a person may not go to the left margin),
- impairment in executive functions (such as initiating, planning, organizing, evaluating, and following through with plans),
- impaired self-regulation of mood and impulsive behavior, and
- impairment in visual aspects of memory. (The person may forget where he or she put something such as homework and may have more difficulty with visual information than with auditory information.)

Cerebral Cortex

The cerebral cortex is the outer layer of the brain. It is divided into two halves or hemispheres. Each hemisphere is divided into four lobes (see Figure 1). While researchers have identified "centers" of the brain primarily responsible for specific skills, they also know that various parts of the brain are interconnected and work together to

Figure 1

Brain Surface



1. Brain Stem
2. Temporal Lobe
3. Frontal Lobe
4. Parietal Lobe
5. Occipital Lobe
6. Cerebellum
7. Spinal Cord

Reprinted with permission from *Traumatic Brain Injury: An Educator's Manual*, Oregon Department of Education, 1991.

control more complex skills. For example, the left parietal lobe is thought to contain the center for speech, but various other regions of the brain contribute to aspects of speech. Still, understanding the focal role of various lobes of the brain helps clarify the broad nature of deficits that may arise in a diffuse brain injury (see Figure 2).

Other Parts of the Brain

Other parts of the brain may also be injured in a traumatic brain injury. The injury may be directly caused by an external force, such as a bullet, or may be the result of shearing, swelling, or anoxia.

An injury to the cerebral cortex not only interrupts functions of the cortex, but also means loss of the ability to modify information from the lower brain centers. The resulting behavior may be the result of unmodified activity of the lower brain center.

Figure 3 describes the function of some other brain centers, including the cerebellum, limbic system, basal ganglia, and the brain stem. Injury to these brain parts can disrupt their specific functions.

Although the brain works as a highly complex, integrated, and interconnected organ, dividing the brain into separate structures can make it easier to understand the various systems.

Types of Brain Injuries

The brain may be damaged by a penetrating (open) head injury (for example, a gunshot wound), which primarily results in focal injuries. The brain also may be injured by a closed head injury in which the skull and protective tissue surrounding the brain remain intact. Closed head injuries can result in focal or diffuse injuries. The brain

Figure 2

The Lobes of the Cerebral Cortex

Name	Function	Explanation	Results of Injury
Frontal	Regulates behavior and movement. Also critical in sequencing movements and in sending commands to muscles to move. Regulates memory retrieval and word-finding. Controls executive functions.	The prefrontal area (just above the eyes) exerts control over impulses, emotions, and attention through its functions of judgment, restraint, and insight. This part of the brain helps keep a person's behavior socially appropriate and allows a person to monitor and modify his or her behaviors. It also helps with executive control functions (for example, initiating, planning, organizing, prioritizing, evaluating, and following through with plans).	May cause a person to appear unreliable, irresponsible, unmotivated, unresponsive, careless, and poorly organized. The person may demonstrate poor emotional control, difficulty executing movements (for example, apraxia), muscle weakness (such as hemparesis or imbalances in muscle tone); and problems with articulation and integrated movement.
Temporal	Receives, analyzes, and integrates auditory information and forms memories.	Involved in the comprehension of the written and spoken word and responsible for higher-order auditory processing, musical skills, verbal memory, visuo-spatial analysis, and memory. Responsible for emotional experiences and expression (for example, understanding the rhythmic or intonation pattern of speech).	Can result in problems in processing auditory-linguistic information. The formation and storage of new memories might be disrupted, but memories stored before such disruption would remain intact. Damage to certain areas may cause visual or auditory hallucinations.

Name	Function	Explanation	Results of Injury
Parietal	Receives, analyzes, and integrates sensory and motor stimuli.	Informs a person that he or she has been touched or has touched an object, and of the location and intensity of the sensation. Helps a person move and know where his or her body is in space. Involved in mathematical abilities, writing, spelling, spatial reasoning, color naming, and interpreting input from various senses. The left parietal lobe has a role in verbal analysis, while the right pareital lobe is involved in recognizing faces, objects, and the directionality of lines, and the ability to assemble and draw.	Can cause difficulty in executing movements despite normal strength (for example, apraxia or motor planning deficits, including difficulty with movements involving speech); impaired perception of limb position in space; and problems recognizing objects by touch alone. Can affect reading and writing skills (for example, spelling or forming letters requiring similar muscular movements such as "h" and "k"). Can also cause difficulty with manipulation of arithmetic symbols and processes and problems associating names to objects.
Occipital	Receives, analyzes, and integrates visual information.	Receives and analyzes impulses running along nerve tracts from the eyes.	Can result in some degree of visual disturbance (for example, cortical blindness; restricted vision; impaired visual recognition; visual neglect; and difficulty scanning, reading, and recognizing spatial relationships, including faces).

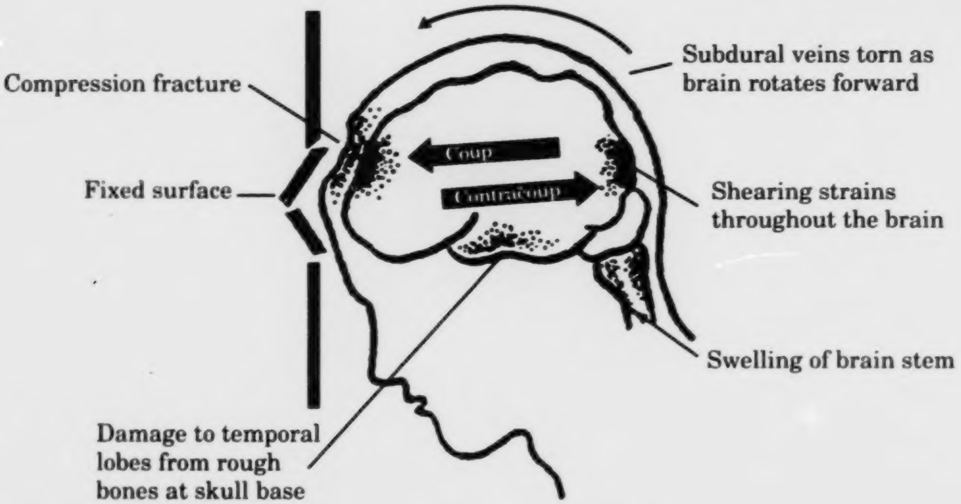
Figure 3

Other Parts of the Brain

Name	Function	Explanation	Results of Injury
Cerebellum	Coordinates muscle function, including tone, posture, movement, and timing. Contribututes to planning and initiation of movement.	Aids in controlling muscles to maintain an upright posture and keeps a person oriented in space. Compares sensory and movement information to allow smooth movement.	Movement becomes awkward and jerky. Loss of balance and coordination in walking, sitting, dressing, and writing. Muscular tremor at rest or with movement. Timing of hand and eye movement, speech, and social behavior may be altered.
Limbic System	Involved in elemental drives, emotions and survival instincts, memory functioning, emotional memories, and reactions.	Turns short-term memories into long-term memories. Stores perceptions that arouse emotion.	Emotional imbalance, impulsiveness, flat affect or over-reaction. Problems learning new information involving facts and events. Over-reaction or under-reaction to a situation.
Basal Ganglia	Relays information from cerebral cortex to the cerebellum and brainstem.	Contributes to postural adjustments and planning of movement.	Muscular rigidity, slow movement, and tremor. Problems retrieving motor habits.
Brain Stem	Major pathway for sensory and motor impulses (except smell) to the cerebral hemispheres and cerebellum. Controls basic life functions, alertness, and arousal.	Affects movement, hearing, balance, and the ability to feel pain, temperature, and touch to the face. Controls eye movement, swallowing, breathing, vomiting, respiration, heart rate, and blood pressure. Raises attention level and alertness. Involves sleep functions.	May be life threatening. Problems with attending and staying alert. Sleep disorders. Difficulty with memory, mental fatigue, and impaired spatial ability. Sensory and movement disorders.

Figure 4

Coup/Contracoup


Compression fracture
Subdural veins torn as brain rotates forward
Coup
Contracoup
Fixed surface
Shearing strains throughout the brain
Swelling of brain stem
Damage to temporal lobes from rough bones at skull base

Reprinted and adapted with permission from *An Educator's Manual: What Educators Need to Know About Students with Traumatic Brain Injury*, Brain Injury Association, Inc., 1985.

may be injured at the time of trauma (the primary injury) and by factors such as lack of oxygen and low blood pressure that occur after the injury. These types of injuries are known as secondary injuries.

Primary Injury

The brain may be injured by a blow to the head, causing bruising (a contusion) or bleeding (a hemorrhage) in the skull. This injury may be detected on a CAT (computerized axial tomography) scan or an MRI (magnetic resonance image) of the head. This type of injury is a focal injury, and sequelae or aftereffects usually relate to those functions controlled by the part of the brain affected by the bruising or bleeding. The injury may be seen at the site of the blow, but it also may be seen on the side opposite the blow. This "contracoup" injury occurs because the force of the blow can cause the brain to "rebound" off the opposite side of the skull (see Figure 4).

The parts of the brain most subject to bruising are those that lie over bony prominences in the skull. This includes the frontal and parietal lobes.

Acceleration and deceleration forces that occur at the time of the impact (for example, motor vehicle accidents) also may injure the brain. These forces essentially "stretch" the very delicate brain nerve cells (axons). Axons carry the messages within the brain, so axonal injury can result in significant brain deficits that may be temporary or irreversible. This type of injury may not be visible on a CAT scan or MRI, although if such injury is visible, it is more likely to be seen on an MRI.

Secondary Injury

Secondary brain injury results from processes following the primary injury—processes that may be set in motion by the primary injury. For example, if the brain is injured by a blow to the head, the brain responds like other body parts, bleeding and swelling with blood and other fluid. This bleeding and swelling may cause increased intracranial pressure. Because the brain is encased within a fixed skull, this increased pressure can force brain tissue through small bony openings. This skeletal herniation can choke off and injure brain tissue. A lack of oxygen or poor blood flow (for example, low blood pressure) also can injure the brain. These secondary injuries can be more devastating than the primary injury.

Assessing Brain Injury

The same factors that make it difficult to define traumatic brain injury also cause variations in definitions of mild, moderate, and severe injuries.

Begali (1992) states that "coma is the period of unconsciousness or unawareness following brain injury... [and] implies an absence of motor response and speech." She also states that "post-traumatic amnesia includes the period of coma and extends until the patient's memory for ongoing events becomes reliable, consistent, and accurate,... or, put another way, until the patient can remember today what happened yesterday."

Many medical professionals use the Glasgow Coma Scale (see Appendix B) to measure the depth of coma. The scale grades eye, motor, and verbal responses of an injured person and also helps medical personnel monitor a person's functional changes. Medical professionals use set criteria to rate a patient's response on a scale of 3 to 15, with lower numbers indicating deeper coma state. The scale defines the severity of the injury, but is limited in its use to determine prognosis.

The extent of recovery an individual might make following a brain injury depends on many factors and is difficult to predict. The course of recovery from brain injury has not been well-studied. Recovery is known to continue for some time, even years following injury. For example, a person may continue to show improvement in cognitive testing ability. It also appears that the most rapid recovery occurs early in the recovery course and that the rate of recovery slows with time. Although their ultimate cognitive functioning may be better, persons with less severe injury may reach this slowed period of recovery sooner than individuals with more severe injury. Medical professionals use the Ranchos Los Amigos Cognitive Scales (see Appendix B) to help measure recovery. These scales reflect differences related to age and provide a description of the level of consciousness.

Many factors affect the outcome following a brain injury: age at time of injury, length and depth of coma, length of post-traumatic amnesia, the presence or absence of seizures, intracranial pressure, and whether the injury is focal or diffuse.

Generally speaking, the outcome is quite dependent upon the amount of brain tissue that is injured. For example, anoxia (lack of oxygen) is an example of a diffuse or widespread injury and typically leads to more significant deficits. Injuries that are more focal (limited to a certain area of the brain) result in deficits in the functions subserved by that part of the brain. Some injuries may have, of course, greater functional impact than others depending upon location.

The child's emotional, social, intellectual, and academic functioning prior to the injury also may affect outcome. For example, one recent study noted that 18 percent of the children who suffered a traumatic brain injury already were enrolled in special education programs before their injury. The authors note that nearly 30 percent of the children studied one year after their traumatic brain injury were enrolled in special education services (Greenspan and MacKenzie, 1994).

Figure 5 illustrates the differences between degrees of injury.

Mild Traumatic Brain Injury

Up to 75 percent of all brain injuries are considered mild (Frey, Savage, and Ross, 1994; Savage and Wolcott, 1994; Begali, 1992). Despite that estimate and the growing evidence of the significance of mild brain injuries, most research has focused on survivors of moderate to severe injuries.

Often, individuals with mild brain injuries do not require hospital admission, and a head CAT scan or MRI may find no abnormalities.

Figure 5 ■

Assessing the Degree of Injury

Rating from Glasgow Coma Scale	Loss of Consciousness or Post-traumatic Amnesia	Degree of Injury
13-15	Less than one hour	Mild
9-12	One to 24 hours	Moderate
3-8	Longer than 24 hours	Severe

Medical recovery usually is rapid and the person is discharged without any perceived need for rehabilitation. However, symptoms may appear when the person tries to resume responsibilities at home, school, or work. A significant percentage of people who sustain minor brain injuries (up to as many as one-third in some studies) demonstrate cognitive deficits and emotional and behavioral changes that last more than three months after the injury and in some cases are permanent.

Deficits may be overlooked or attributed to some other cause (such as depression or anxiety). However, lack of an accurate diagnosis and understanding of mild traumatic brain injuries can lead to various adjustment complications, including diminished self-esteem and self-confidence. This can lead to further frustration and failure. If this psychological spiral continues unabated, the emotional repercussions of undiagnosed or inadequately understood symptoms can be more disabling than the primary problems that fuel it.

The term "mild traumatic brain injury" may be misleading, for although no severe medical complications may be evident, these injuries can have significant lifelong psychosocial and cognitive consequences for the individual and his or her family. For this reason, school district personnel must maintain a relationship and share information with the student's parents and physician. The following symptoms may be evident in a person who has sustained a minor brain injury.

Physical Changes

Headache is the most commonly reported physical symptom and occurs in 50 percent to 70 percent of all people who sustain mild brain injuries. Other physical symptoms include

- dizziness,
- weakness,
- numbness,
- nausea,
- double vision (diplopia),
- hearing problems or tinnitus (ringing in the ears),
- hypersensitivity to sound or light, and
- fatigue or sleep disturbance.

For most individuals, these symptoms resolve completely within three months, but many individuals continue to experience these symptoms for more than one year.

Psychosocial Changes

In the context of a traumatic brain injury, the term psychosocial refers to social, emotional, behavioral, and psychological effects (Deaton and Waaland, 1994). Significant changes that can follow mild traumatic brain injury include

- perceived failure to perform and achieve as well as before,
- personality changes,
- impatience,
- irritability,
- anxiety,
- depression,
- stress intolerance, and
- emotional lability.

Injury to the frontal lobe may result in a person having greater difficulty regulating emotions (emotional lability). In some instances, the person may cry more easily or become more irritable or more readily frustrated. In other cases, the person may find it more difficult to show emotion. The person may feel more anxious due to changed abilities and the unpredictability of his or her own behavior or of the surrounding world.

People who have sustained a mild brain injury may have more conflicts with others, forget things, have problems reasoning, need extra time to accomplish tasks, and have problems with organizing, planning, and initiating activities. In one study, 67 percent of people who sustained a traumatic brain injury had new behavior problems following their traumatic brain injury (Asarnow, et al., 1991).

For some people who have sustained a mild brain injury, social relationships may falter because other people may not understand what has changed. Social relationships can also be compromised by the individual's difficulty in appreciating the subtle nuances of social situations or because of his or her impulsivity or tendency to behave inappropriately. Certain behavioral and cognitive effects, such as decreased initiative, can lead others to believe the individual is being resistive, unmotivated, irresponsible, and careless. When the disability is less obvious and more difficult to externally validate (because the individual looks fine), family members and teachers may become impatient, doubtful, or intolerant of the person's claimed inabilities and deficits.

Cognitive Changes

Cognitive impairments are the most prominent residual symptoms for many patients after mild brain injury, with memory and concentration deficits being the most common complaints noted. The frontal lobes are particularly vulnerable to damage from any kind of traumatic brain injury. The frontal lobes are responsible for the executive functions of initiating, monitoring, planning, organizing, evaluating, and adjusting behavior. Frontal lobe injuries may cause a person to

- have difficulty with attention or concentration,
- be easily distracted and unable to find his or her place in a task,
- be unable to "juggle" two activities at the same time,
- have difficulty starting a task even though he or she knows it is necessary,
- have difficulty identifying and following the steps in a task (planning and sequencing),
- have difficulty making choices and decisions,
- have difficulty with abstract reasoning and problem solving,
- have difficulty evaluating a plan of action and recognizing potential problems,
- have difficulty recognizing that he or she has made an error (self-monitoring),
- be unable to readily change their behavior (inflexibility and perseveration), and
- be more impulsive and uninhibited.

A mild traumatic brain injury also can cause memory problems, decreased speed of processing information (for example, decreased ability to think and respond quickly), difficulty finding the appropriate word to use, and decreased fluency in thoughts and ideas (for example, a person's ability to list all the four-legged animals he or she can think of).

In general, people with a mild brain injury often may demonstrate distractibility, poor planning and sequencing, aimless behavior, preoccupation with trivial matters, perseveration, confusion when confronted with choices, failure to comprehend the significance of events (poor insight), impaired judgment, and lack of foresight. Their personality and behavior may be significantly different than it had been before their injury.

Neuropsychological assessment, which evaluates thinking and behavioral function, often is the most important tool for diagnosing a mild traumatic brain injury. This testing can assess the impact the injury has had on the person better than a CAT or MRI can. Neuropsychological assessment aims to identify cognitive, behavioral, or emotional deficits and the extent to which these may have resulted from the traumatic brain injury. It also can help identify which deficits may have existed before the accident and which may have occurred as part of the person's emotional response to the injury.

The following neuropsychological pattern may appear following mild traumatic brain injury:

- diminished performance on timed tasks;
- preserved skills on tasks requiring use of previously learned information;
- diminished performance on tasks involving attention and concentration;
- diminished performance on tasks involving abstract reasoning, flexible thought, and novel problem solving; and
- diminished performance on tasks involving organization, planning, and sequencing.

Neuropsychological assessment may underestimate a person's deficits. Persons with a mild traumatic brain injury may perform well on a wide variety of neuropsychological assessment measures but also may experience substantial impairment in activities of daily living because the test may not correspond to actual daily functioning. Also, a person with above-average cognitive abilities before injury may score normal test results after injury, yet have had significant decline from their premorbid status because the tests given after injury won't show the actual decline from premorbid ability. Furthermore, some identified cognitive deficits may be due to behavioral or emotional problems that interfere with test performance, and neuropsychological assessment may be unable to identify these.

Moderate and Severe Traumatic Brain Injury

A student who has sustained a moderate to severe brain injury may regain considerable intellectual and cognitive functioning. Some students may have significant cognitive and neurobehavioral difficulties (for example, emotional lability, personality changes, and attention deficits). In addition, some deficits may not appear directly following injury but may become apparent over time as damaged structures functionally mature yet prove unable to support complex functioning. For example, the effects of injury on higher-level (academic and interpersonal) problem solving does not become apparent until the student is old enough for the expected appearance of these skills.

Over time, performance on measures of traditional intelligence tests by students who have suffered moderate to severe brain injury tends to remain below that of the general population. Specifically, many studies show that after closed head injury, performance IQ is significantly lower than verbal IQ. Over time, the gap between verbal and performance IQ tends to narrow. What is not entirely clear from studies using traditional IQ measures is to what extent the findings can be attributed to physical difficulties in performing the tests, slower information processing, or other cognitive variables (such as attention and concentration deficits and word-finding problems).

Physical Changes

Seizures may occur at the time of, or soon after, the injury (early post-traumatic seizures), or may develop some time later (late post-traumatic seizures). Seizures are caused by abnormal electrical impulses in the brain. Damaged brain tissue is more likely to produce these impulses, which can set off seizure activity. Most seizures occur soon after injury. The chance they will develop decreases with time, although the increased risk following brain injury continues until about four years after the injury. Medical personnel may prescribe medications (anticonvulsants) to prevent seizures, but these generally are not used unless seizures actually have occurred.

School districts should include a procedure for responding to seizures in either their district policy manual or their special education policy manual. For some students, an individualized health care plan may specify when to contact the student's physician or emergency personnel in case of seizure.

Headaches, which are more common following a mild injury than following more severe injuries, generally resolve with time. If a student has persistent headaches, school district personnel should contact the parents and physician. School personnel also should contact the physician if severe headaches develop soon after the brain injury, because this may reflect increased intracranial pressure.

Fatigue also is common following brain injury. Persons generally sleep much more than they had prior to the injury, and they may require daytime naps. Fatigue can increase as physical demands or emotional stressors increase (for example, when a child returns to school). A child also may demonstrate mental fatigue (diminished efficiency) without evidence of physical fatigue.

Schedule modifications may be necessary, such as part-time attendance, providing a rest or nap period, interspersing more complex classes with easier classes, or otherwise adjusting the courseload according to the student's energy levels (see Chapter 6).

Brain injury can result in double vision (diplopia) or decreased visual acuity. Occipital lobe injuries also may cause cortical blindness, which means the brain does not perceive visual information. This often resolves gradually with time, but it can be permanent.

Hearing deficits may occur particularly when there is a fracture to the temporal bone. A fracture here can injure either the acoustic nerve (and this is usually permanent) or can disrupt the tiny bones in the middle ear, which transmit sound to the acoustic nerve (this may be reversible through surgery).

At times following brain injury, hydrocephalus (increased fluid in the ventricles of the brain) can occur. This may require shunting. Children with shunts may develop headaches or vomiting if their shunt stops working and the fluid pressure increases. School staff members may notice personality changes or changes in cognition in a child with a shunt, and they should notify the student's parents about their concerns.

Abnormal muscle tone is not unusual after brain injury. Spasticity, which refers to increased muscle tone of a specific nature, interferes with voluntary movement. Persons with increased spasticity typically have difficulty moving, particularly making more fine movements, and they may be unable to walk or to use their hands. Because spasticity makes it more difficult to move a joint through its full range, it also can result in contractures.

Because brain injury can affect the muscles involved in swallowing, a person who has sustained a brain injury may be unable to obtain adequate nutrition orally. The person may lose weight or, in the case of a child, fail to grow. In addition, the person may have gastroesophogeal reflux in which stomach (gastric) contents are regurgitated back into the swallowing tube (esophagus). Regurgitation can damage the esophagus and also can result in aspiration (inhalation of stomach contents into the lungs), leading to pneumonia and lung damage.

Brain injury also can affect hormone regulation and production, which may cause a disturbance with thirst regulation or growth. Because of all the physical changes related to brain injury, a physician often needs to remain involved.

Psychosocial Changes

Social, emotional, behavioral, and psychological effects can present the most significant and lasting obstacles when it comes to the person's adjustment. According to Deaton and Waaland (1994), the psychosocial effects of traumatic brain injury can include

- social or emotional disinhibition,
- agitation or irritability,
- impaired judgment and motivation,
- lower frustration tolerance,
- impaired mood (for example, depression or anxiety),
- egocentricity (for example, insensitivity to others, unawareness of impact of oneself on others, or increase in demanding behavior),
- social withdrawal,
- difficulty understanding humor,
- limited insight,
- difficulty correcting behavior even after feedback,
- perseveration on one behavior or idea,
- impaired attention, and
- fatigue.

These behaviors may be more or less severe among different individuals and may or may not be short-lived; they may appear only in certain situations or may be more or less stable across all environments. In one study, for example, 73 percent of people with severe traumatic brain injuries had new behavior problems following their traumatic brain injury (Asarnow, et al., 1991). These behaviors may affect the person's academic performance, interpersonal relationships, self-confidence, and independence.

Psychosocial changes may be caused directly by the brain injury but also may be caused by indirect effects of the brain injury. For example, a child who experiences greater frustration in the classroom may become more irritable. This can affect relationships with peers, teachers, and family members and possibly result in depression. Some behaviors are exaggerations of premorbid behaviors while others may emerge following the injury. For example, a child who was sometimes angry before the injury may become aggressive after the injury, as those parts of the brain that enabled the person to exercise control over the angry impulses are now damaged. In contrast, the child who was easy-going before the injury may become aggressive. It also is important to remember that a maladaptive behavior may be unrelated to the injury (for example, "acting out" behavior in adolescence).

In short, psychosocial problems after traumatic brain injuries can be as or more disruptive than the cognitive or physical changes. Yet, psychosocial problems can vary widely, proving unpredictable regardless of the nature and extent of the brain injury.

Cognitive Changes

Standardized tests alone may neither adequately assess a child following a traumatic brain injury nor accurately predict how a child will perform in a school setting. Neuropsychological assessment can prove very important in assessing the child's cognitive abilities (such as visual, perceptual-motor, and overall psychological functioning) and in providing a baseline level of functioning. In view of the sometimes rapidly changing status and needs of children who have sustained brain injuries, keeping test and performance information current is critical.

Memory deficits are among the most common deficits following brain injury. Immediate memory usually is more affected than remote memory. Disruption of remote memory (events prior to the injury and early in life) is less common. Rather, individuals typically have difficulty processing, encoding, storing, and remembering new information (in the most severe cases, information from moment to moment; in less severe cases, short-term memory from hour to hour or day to day). Thus, a person who has sustained a brain injury readily may forget something that happened recently but may accurately recall events years before the injury.

Persons with memory deficits might forget the name or face of a person they recently met or they may not remember what they had done earlier in the day, such as what classes they attended, what material they covered, or what assignments they received. They may have difficulty recalling what they have read. As they attempt to compensate for their memory loss, a person with memory deficits may use confabulation (making up or believing things that really did not occur) to fill in information they cannot remember. Other memory changes can include difficulty recalling familiar information, trouble thinking of a certain word, or difficulty naming objects (word retrieval).

Typically, there will be a period of post-traumatic amnesia. Those who do not recall the traumatic event generally do not regain this memory because information at the time of the injury probably was not encoded into long-term memory.

Memory functioning is a complex, dynamic process involving aspects of attention, concentration, and information storage and retrieval. Practicing or exercising memory in one area or skill generally does not improve memory functioning in other areas. For example, if an individual with memory impairment practices a memory game, he or she is not likely to show improved memory functioning in terms of day to day functioning. Memory functioning is different from muscle functioning and physical rehabilitation, where general exercises may strengthen a particular body part for all or most functions the part can perform. Improved memory functioning generally requires training of strategies that generalize well (for example, learning to use mnemonics to recall items on shopping lists), learning situation-specific skills (for example, overlearning a particular routine on the job), or learning compensatory techniques (for example, using a memory notebook to record assignments).

The following cognitive sequelae (aftereffects) are common following moderate or severe traumatic brain injuries.

- impulse control problems
- attention problems, including
  - — impaired alertness or arousal
  - — impaired focusing of attention
  - — impaired concentration
  - — reduced ability to retain new information
  - — difficulty performing two or more activities concurrently
- slowed information processing, (for example, less efficiency making sense of what is heard or read and slowed speed and task execution)
- difficulty adapting to change (inflexibility) and dealing with novel situations
- disturbances in information processing, including
  - — difficulty following the train of conversation
  - — difficulty completing timed tasks
  - — difficulty comprehending complex instructions or directions
- disturbances in language and communication skills, including
  - — difficulty comprehending the meaning of words
  - — word finding (labeling) difficulties
  - — difficulties with verbal expression
  - — impaired ability to remain on topic (for example, tending to become tangential or fragmented in free speech)
- disturbances in general thinking processes, including
  - — limited to concrete thinking
  - — difficulty identifying the core or main idea (convergent thinking)
  - — difficulty shifting one's perspective to consider alternatives (for example, creative thinking)
  - — difficulty with novel, open-ended, and ambiguous tasks
  - — difficulty generating alternative ideas
  - — problems with initiative and follow-through (for example, formulating and implementing action plans, self-monitoring, and self-correcting actions)
- disturbances in self-awareness, including
  - — unrealistic expectations concerning recovery of abilities and prospects of resuming preinjury lifestyle
  - — limited awareness of risk
  - — poor compliance or motivation and resistance to remedial efforts. For example, adolescents with self-awareness deficits may not appreciate their disabilities. They may not see the need for specialized educational intervention and may not understand the basis of social changes stemming from their brain injury.

Cognitive recovery following brain injury results from three broad processes:

- spontaneous recovery (resolution of a nonpermanent injury—such as a decrease in brain swelling).
- neuroplasticity (the ability of the brain to lay new or alternative pathways, which allows for improvement beyond spontaneous recovery).
- augmentative (compensatory) strategy learning (techniques or systems such as memo pads, timers, notebooks, and calendars—that help the individual compensate for areas of deficit).

Cognitive rehabilitation is a new field with a narrow research base and a lack of consensus on theory, terminology, and practice. Cognitive rehabilitation can be defined as "the therapeutic process of increasing or improving an individual's capacity to process and use incoming information so as to allow increased functioning in everyday life" (Sohlberg and Mateer, 1989). Cognitive rehabilitation relies primarily on factors of neuroplasticity and augmentative strategy learning. It can include methods such as direct retraining of skill or cognitive functions, compensatory techniques (such as memory notebooks and preprinted numbers tables), neuropharmacologic interventions, psychotherapeutic approaches, and behavior-management programs. Cognitive rehabilitation is sometimes referred to as cognitive therapy, cognitive remediation, cognitive retraining, and neurological remediation.

Cognitive rehabilitative methods generally rely upon basic and essential components of learning (for example, breaking down tasks into highly articulated routines and subroutines to make the problem-solving task fully understandable and providing explicit cueing and feedback to guide the behavior).

The development of an effective cognitive rehabilitation program must include an initial analysis of the person's current level of functioning (a thorough assessment of the individual's cognitive strengths and weaknesses across domains). The person's motivation to improve and awareness of deficits should be considered along with priorities for therapeutic remediation, which are based on the goals of the students, parents, and teachers.

Cognitive rehabilitation is based upon the following principles:

- Brain functions can be enhanced after brain injury.
- Training should proceed only after the student's cognitive deficits have been specified.
- The nervous system learns by doing, that is, by active involvement.
- Repeated activity and practice results in skill development and greater adaptive functioning.
- Learning, particularly in persons who think more concretely, tends to be enhanced when the material taught is relevant and meaningful.
- Consistent, concrete, and systematic feedback aids learning.
- The practice of stimulating alternative sensory systems (visual, auditory, and so forth) enhances the learning process.
- Training should take into account the generalization of skills to various settings and situations. Learned skills need to generalize to daily activities.
- Learning or relearning new (particularly complex) skills may take a long time.

Differences by Age

The common belief that children do better than adults following a brain injury is a misconception. Medically, this may be true; the child's body may be healthier and heal more readily. However, the child may have difficulty as he or she faces new developmental challenges that require increasingly complex skills (such as complex reasoning and self-monitoring skills). The type of integrated or higher-level cognitive abilities required as the child matures may not be present as a result of the child's brain injury (Lehr, 1990). The effects of injury on higher problem-solving skills in academic and psychosocial areas may not become apparent until the child reaches the appropriate developmental stage at which such skills generally emerge.

Adults who have sustained a traumatic brain injury may do better because of their higher level of knowledge and experiences prior to the accident. It is often easier to relearn an old ability than it is to learn new ones. For example, it may be easier for an adult to regain reading ability than for a child to learn to read when injured prior to developing this skill. Children who are still developing new skills at the time of the injury have not learned as much as adults, and this may influence outcome.

No matter what the developmental age of the child at the time of the brain injury, when a parent nearly loses that child, granting or regranting independence to that child can be extraordinarily difficult. The return to independence can be a painful reminder of the initial accident and circumstances surrounding it. Yet, independence is a critical developmental factor at all stages in a child's development, infancy through adolescence.

Birth to Age 3

An infant's development occurs across sensory, motor, social, language, and emotional areas (Lehr, 1990). For an infant or toddler, developing a sense of trust about having his or her own needs met is the primary developmental task. During this time, a child learns about the stability of the physical world as he or she learns to differentiate himself or herself from others and from the environment. Learning to explore and interact with the world becomes a basis for further development.

This is a time when the child is learning to recognize and discriminate and to use and understand words to represent things in the world. Rapidly developing motor skills serve as the support for further cognitive development (Lehr, 1990). "If what is most vulnerable to traumatic brain injury is the capacity to learn rather than the loss of what has already been mastered, then very young children would be at highest risk for extensive interference in their ability to proceed with learning and development" (Lehr, 1990).

A brain injury at this age can threaten the development of the bonds that tie a child to his or her parents. This can lead to disruption in the child's active interaction with and exploration and mastery of the environment. A child injured at this period may be impaired in learning to perceive the environment through the senses and to act upon it so that he or she learns that objects and people remain stable and predictable over time. This understanding is the very essence of developing a sense of self, of going on to feel autonomous about exploring the world and developing a sense of self-control and self-confidence. This understanding also is the essence of developing a sense of trust in caretakers. Even with those infants and toddlers who appear to recover well from significant brain injuries, there may be generalized lowering of ability, rather than specific deficits.

Preschool

The preschool years are a time of high activity. The behavioral characteristics of a preschooler, such as hyperactivity, impulsivity, attention variations, and decreased compliance, relate to a greater propensity for injury risk (Lehr, 1990). During these years, preschoolers become more involved in the larger social world and begin to understand how the world works and how others interact. A primary task of a four- to six-year-old involves the child's attaining competence as he or she learns to take initiative. He or she is rewarded for curiosity and exploration. Cognitively, the preschool child begins to understand concepts of time, quantity, size, interpersonal relationships, and emotion (Lehr, 1990).

A brain injury during the preschool years can disrupt the child's developing sense of autonomy and self-confidence. Direct behavioral effects of traumatic brain injury in the preschool years can include difficulties with distractibility, perseveration, and hyperactivity. Cognitively, a preschooler may slow developmentally in learning to move beyond the egocentric focus of the world and in learning to delay gratification by developing internal mechanisms of self-control. A brain injury at this age can severely threaten the child's growth of autonomy through reduced opportunities for initiative and reduced curiosity and exploration or because of overprotection.

The 7- to 12-year-old

The developmental challenge for a 7- to 12-year-old involves learning rules and facts to help him or her master understanding of self, families, peers, and the world at large. A child at this age begins to concretely understand social relationships and academic facts and learns to cooperate and compete. As the child gains an understanding of his or her own abilities in relationship to others, feelings of mastery, self-esteem, and belonging emerge. During this period, children begin to plan and initiate their own activities, progressively broadening their social experiences away from their immediate families.

Cognitive skills at this age include learning to read, write, and adapt to the needs of groups. Out of the child's desire to develop a sense of competence through understanding, the child seeks to apply himself or herself and to be reinforced for those efforts. A brain injury at this age can affect the child's sense of competency. Socially, physically, and academically, the child may have difficulty keeping up with peers by interacting, doing, and learning. Cognitively, brain injury may affect the child's learning and ability to think concretely.

From a social perspective, a child at this age who is different (behaviorally or in appearance) is often sensitive to teasing about differences that make him or her stand out from the peer group. In short, sustaining a traumatic brain injury during this period, "threatens the very core of childhood; that is, learning to be in control of one's self, being able to function as part of a group, and being able to master the skills and information that are important to the child and those in one's world" (Lehr, 1990).

Adolescence

Brain injury in the teenage years can disrupt an adolescent's developing identity, causing confusion about the person's developing sense of self and ability to function independently. A major developmental task of adolescence involves establishing a personal identity consistent with the past and future. A brain injury at this critical developmental period can cause confusion as the continuity of new and old roles, abilities, and values is further disrupted.

Cognitively, this is the age at which frontal or executive functions more fully emerge. These functions enable a person to think conceptually, to organize and execute maturely thought-out and planned behaviors, to evaluate behaviors and plans, to delay gratification, to inhibit impulses and emotional expression, and to think flexibly (Lehr, 1990). The teenager's ability to reason abstractly enables higher levels of moral and ethical thought and more sophisticated analysis of complex material.

Cognitive changes at this age can severely interrupt an adolescent's ability to think symbolically and abstractly, dramatically affecting school performance (for example, thinking hypothetically about ideas) and interpersonal relationships (for example, integrating societal expectations, thinking non-egocentrically, using good judgment, and anticipating consequences).

A teenager who experiences interruption in his or her social or academic life may suffer major academic and psychosocial effects. A teenager who is unable to ponder hypothetical possibilities or who remains egocentrically bound may not gain perspective on where his or her life is going and how to reconcile his or her interests, needs, values, and aspirations in life. An adolescent who is unable to plan and take responsibility and assume new privileges is ill-prepared to pursue social, personal, and vocational goals while his or her peers move on to do so. The teenager may then become increasingly confused rather than defined about his or her role with regard to work, family, and friends. Responsible decisions about safety (for example, driving, alcohol and other drug abuse, and appropriate sexual and interpersonal behaviors) may be lacking.

References

Asarnow, R., et al. "Behavior Problems and Adaptive Functioning in Children with Mild and Severe Closed Head Injury. *Journal of Pediatric Psychology* 16 (1991), pp. 543-555.

Bailes, J. "Head Injury in Athletes." In *National Athletic Trainers' Association Research and Education Foundation Proceedings: Mild Brain Injury in Sports Summit.* Washington, D.C., April 16-18, 1994, pp. 6-12.

Begali, V. *Head Injury in Children and Adolescents: A Resource and Review for School and Allied Professionals.* 2nd ed. Brandon, VT: Clinical Psychology Publishing Co., 1992.

Deaton, Ann V., and Pamela Waaland. "Psychosocial Effects of Aquired Brain Injury." In *Educational Dimensions of Acquired Brain Injury.* Eds. Ronald C. Savage and Gary F. Wolcott. Austin, TX: PRO-ED Inc., 1994.

Frey, William, Ronald Savage, and Bradford Ross. "The Adolescent with TBI: Cognitive, Psychological and Educational Issues." *Adolescent Medicine: State of the Art Review* 5.2 (June 1994), pp. 311-326.

Greenspan, A.I., and E.J. MacKenzie. "Functional Outcome after Pediatric Head Injury." *Pediatrics* 91 (1994), pp. 425-432.

Lehr, E. *Psychological Management of Traumatic Brain Injuries in Children and Adolescents.* Rockville, MD: Aspen Publishers, Inc., 1990, pp. 1-14.

Savage, Ronald C., and Gary F. Wolcott, Eds. *Educational Dimensions of Acquired Brain Injury.* Austin, TX: PRO-ED, Inc., 1994.

Sohlberg, McKay Moore, and Catherine Mateer. *Introduction to Cognitive Rehabilitational Theory and Practice.* New York: Gulford Pr., 1989, pp. 3-4.

Returning to School 3

Students who have sustained a traumatic brain injury and their families encounter a series of critical transitions during recovery. The student's discharge from the hospital or rehabilitation facility to the home and return to community, including school, are pivotal transitions processes. These transitions require detailed planning, coordination, and frequent communication by the student, parents, medical personnel, and school personnel. If all these people are aware of the medical and education pathways in these processes, everyone—especially the student—will benefit.

Bridging Systems

The medical system and the educational system represent two aspects of a rehabilitation continuum for a student with traumatic brain injury (Begali, 1992). A successful transition between them is more likely when medical personnel are aware of what each system has to offer and the rules by which each operates.

Historically, parents have been responsible for creating the bridge between these systems. However, parents experience great emotional distress following their student's injury, may not have an adequate understanding of the special education process, and may not be prepared to coordinate all the tasks involved (see Chapter 9). Because of this, both the medical team and school need to appoint medical and school case managers who can assist with the return.

Early contact between medical personnel and school staff members is critical to establishing the rehabilitation continuum. Identifying case managers in both systems facilitates communication and fosters a mutual commitment of responsibility of success. The rehabilitation facility's social worker, discharge planning nurse, or rehabilitation counselor may act as the case manager for the medical system. The school psychologist, special education teacher, school social worker, or principal may fill that role for the educational system. The following list offers some factors school administrators should consider when selecting a case manager.

When selecting a case manager, school administrators should consider the following factors:

- The primary role of the case manager is that of communicator. Therefore, it is crucial that the case manger is allocated sufficient time to communicate. Adding a student with a traumatic brain injury to someone's case load when the case load is already full will result in less than optimum outcomes. The case manager must meet during the school day with members of the educational team, talk with medical personnel, and observe the student. The case manager needs a flexible schedule because meetings and phone conversations with student's parents often can be arranged only after school hours.
- Case managers must be selected on a case-by-case basis because the needs of a student with traumatic brain injury are extremely individual. A counselor or school psychologist may be an appropriate case manager for the student who is in regular education most the school day, while a school nurse may be appropriate for the student with complex medical needs.
- Because many people are involved in meeting the needs of a student with traumatic brain inju-

ry, the school case manager must be a team player. The case manager must establish and maintain relationships with each member of the medical and educational teams to encompass a comprehensive approach.

The school case manager is a vital link in successfully planning an educational program for a student with a traumatic brain injury. The case manager's primary role is as communicator with family members; the student; direct service providers such as speech and language pathologist and occupational therapist; and school administrators. The school case manager's other roles include translator and disseminator of medical and other specialized information, student advocate, monitor, problem solver, and participant in planning an individualized education program.

As soon as school members know that a student has suffered a traumatic brain injury, administrators should select a case manager. Ideally, this happens during the first few days of the student's hospitalization. After obtaining written parental consent, the case manager can contact medical personnel to begin sharing information.

During the initial meeting, the case manager should tell the parents about the special education process and the role of the case manager. The case manager provides the parents with information from the school district to examine at their convenience. The initial meeting gives the case manger an opportunity to respond to the parents' questions and concerns. The parents may offer information about the student's hobbies, peer activities, school performance, goals and ambitions, and personality traits.

If possible, the school case manger should meet with the medical case manager soon after the student's injury. Depending on the student's medical status, the two case managers should meet with the student and medical professionals who are treating the student.

The school case manager can help medical team members understand the school district's services and legal responsibilities for serving a student with traumatic brain injury. Also, the school case manager can offer the medical team valuable information about the student's pre-injury educational status, learning style, strengths and weaknesses, extracurricular activities, and personality traits. The medical and school teams use data such as test scores; grades; behavioral information; extracurricular interests; current courses, assignments, and text; and established career or higher educational plans to develop specific treatment goals in the rehabilitation plan.

The school case manager may gather information. With parental permission, the case manager may videotape the student participating in rehabilitation to share with school staff members and students. School staff members may benefit from seeing the strategies medical staff use to compensate for the student's deficits and to manage behavior (Ylvisaker, 1991; Begali, 1992; Florida, 1993). Fellow students will be able to see and hear their classmate, perhaps for the first time since the injury. The school case manger advises classmates of the importance of their role in the student's recovery process (Begali, 1992).

Also, the school case manger may update the student with a traumatic brain injury with information about classmates and school activities. Before the student's return to school, an outreach consultant from the rehabilitation facility may visit the school to answer questions and concerns from staff members and students.

The case managers continue to share information as they plan for the student's return to school. They discuss medical and therapy needs as well as potential difficulties relating to environmental barriers in the school, the distance between rooms, and other factors affecting mobility. The school case manager needs to review pre-discharge reports and evaluations and continue to update school administrators, teachers, and other personnel on the student's performance. The school case manager shares with appropriate school personnel a list of medications, possible side effects, and how the medicine may affect the student's performance in school. This information will assist members of the multidisciplinary team in assessing the student.

Because the needs of a student with a traumatic brain injury change rapidly, the school case manager needs daily contact with the student when he or she first returns to school. This helps the case manager determine if the program is working and offers opportunities to solve problems as soon as they arise.

Regular and frequent (daily or weekly) direct contact with the parents through telephone calls and meetings is vital once the student returns to school. This ongoing communication helps reduce the parents' anxieties and provides the family with a sense of involvement, constructive partnership, and assurance. Such communication can also aid the case manager, because the parents may have valuable insight into the how the student is reacting to school.

While the parents need information about school concerns, more importantly, the case manger informs the parents about the student's achievement and progress in the classroom, therapy sessions, and peer relationships. The case manager must relay constructive, positive feedback to the parents in a timely manner.

Returning Home

The recovery process for a student with traumatic brain injury involves various professional people, special services, and treatment protocols. A student who enters the hospital system through the emergency room may require special trauma and life-support services, including surgical interventions. Some students with a traumatic brain injury require lengthy stays at a rehabilitation facility while others may be discharged from the hospital and return home with few recommendations.

Discharge from the hospital or rehabilitation facility can be an extremely turbulent experience for the student and family (Rosen and Gerring, 1986; Begali, 1992). Family members are liberated from the restrictions of hospital existence, yet they may feel that they have lost the support of the staff members whom they have grown to rely upon and trust. The student loses the structure of the hourly tasks and expectations of an interdisciplinary rehabilitation program. Parents resume the primary caretaker role, often with little respite available.

Although not all students with traumatic brain injury follow the same recovery process, the following information serves as a guide for school districts as they work to meet the needs of individual students with a traumatic brain injury.

Rehabilitation is the process of restoring the highest possible levels of physical, psychosocial, and cognitive functioning. Rehabilitation for a student with a traumatic brain injury begins as soon as the student emerges from his or her coma and is able to engage in some purposeful activity. Usually rehabilitation services are interdisciplinary.

Because numerous people are required for successful rehabilitation, the team approach works best. Team members in the rehabilitation process may include

- the student,
- family members,
- a physician,
- a physical therapist,
- an occupational therapist,
- a speech and language pathologist,
- a psychologist and neuropsychologist,
- a primary nurse,
- a social worker,
- a rehabilitation counselor,
- an audiologist,
- school staff members, and
- the discharge planning nurse.

Team members work with the student and his or her family to develop and implement treatment plans. They design treatment to help the student regain mobility, communication, independent living skills, and cognitive functioning.

The student requiring rehabilitative care may participate in structured, intensive therapy sessions as frequently as his or her behavior, attention, and concentration levels allow. Although the initial treatment emphasis is geared toward physical recovery, long-term rehabilitation efforts focus on cognitive retraining and behavioral rehabilitation.

The importance of educational interventions to the long-term recovery for a student with a traumatic brain injury is well-recognized (Begali, 1992; Carter, 1993). The school district's ability to integrate the student into appropriate services greatly influences the student's recovery.

The school case manger coordinates a team of school staff members who work to meet the needs of a student with a traumatic brain injury. Representatives from the school team should visit the rehabilitation facility to meet with the student, the family, and rehabilitation team members to establish an understanding of the student's level of functioning. This meeting creates valuable linkages that will last long after the student's discharge from the facility.

Members of the school team may include

- the parents,
- the student,
- the school case manager,
- the school principal,
- a school physical therapist,
- a school occupational therapist,
- a speech therapist,
- a school psychologist,
- a school counselor,
- a special education teacher,
- a regular education teacher,
- a physical education teacher,
- a school nurse, and
- music, art, and reading instructors.

School team members may begin the school district's multidisciplinary team process during rehabilitation, depending upon the student's stage of recovery. A written referral to the school district is required to initiate the process (see Chapter 4).

Because the student's medical or educational needs may change rapidly during the rehabilitation process, both medical and school personnel need to prepare for discharge from the hospital or rehabilitation center and return to the school system. Sec. 115.85(2)(e), Wis Stats., may entitle the student to educational services while in rehabilitation (see Appendix C). During the acute recovery period it may not be medically appropriate for the student to do school work.

To determine discharge planning options, school team members can provide the medical team with information about the school's physical layout and the availability of special services. Medical team members can provide important information about the strengths and needs of the student.

Returning to the Community

Medical and school personnel can also work together to help the family when the student is returning to the community. The family may need referrals to other agencies (such as Head Start), outpatient therapies, home health care, special community transportation, respite care, and the Department of Health and Social Services.

Birth To Three Program

The Wisconsin Department of Health and Social Services is responsible for meeting the developmental needs of eligible children from birth to age three. It does so through "Birth To Three" Programs that operate at the county level. Children who sustain a traumatic brain injury may be eligible for services through this program.

Because public schools are responsible for serving students with exceptional educational needs from ages three to 21, the Birth To Three Program refers students with suspected needs to the public schools. Through referrals from Birth To Three and through its own screening program, the school district evaluates and identifies students with exceptional educational needs.

When screening or evaluating young students with traumatic brain injuries, school staff members need to be aware that some effects of a brain injury sustained early in life may not become apparent until the student is older. For example, a three-year-old student with traumatic brain injury may recover and reach age-appropriate physical, cognitive, and behavioral milestones. However, since a three-year-old student cannot be expected to think abstractly, deficits in abstract thinking cannot be identified in the brain injured three-year-old but may become apparent as the student matures and reaches higher grade levels.

Even if a young student with a traumatic brain injury does well in early grade levels, the student may experience cognitive, psychosocial, and physical difficulties as the educational experience becomes more challenging and requires different cognitive abilities and functional skills.

When these difficulties are not anticipated or identified as the student matures, the student may have further deficits. For example, social behavior may deteriorate as a result of the student's frustration as he or she attempts to respond to increasing academic demands. School staff members need to be aware of the progress of the young student with a traumatic brain injury to monitor any problems in the educational environment as the student matures.

School Age

For a student with a traumatic brain injury, returning to school involves planning, implementation, ongoing evaluation, and careful attention to an array of data. Figure 6 lists 20 objectives medical personnel should consider as they help with the student's transition to school and Figure 7 lists 20 questions school personnel should ask before the student returns to school.

Trends toward shorter hospital stays may mean increased pressure on school personnel to meet the needs of students with traumatic brain injury at an earlier stage of recovery (Rosen and Gerring, 1986). Difficulties may occur due to insufficient planning time and untrained staff members who don't understand children with traumatic brain injury.

When a student who has sustained a traumatic brain injury returns to school, parents and educators should consider the following options adapted from Rosen and Gerring.

The student may

- return to the same class, with no additional service;
- attend regular education classes with modifications and supplemental aids or services;
- receive homebound instruction;
- receive a combination of homebound instruction and school classes (informal school visits and at-home instruction);

- require special education (a continuum of placement options ranging from regular education with a resource teacher to a self-contained program); or
- require other placement (such as a residential facility).

Information Sharing

School personnel, including support staff members and peers (if appropriate), should receive inservice training before a student who has sustained a traumatic brain injury returns to school (NHIF, 1985). The inservice should include information about brain function; brain injury; physical, psychosocial, and cognitive concerns; and specific issues of memory, attention, concentration, abstract reasoning, fatigue and alertness, stress tolerance, and ability to plan and organize (Begali, 1992). School staff members may ask medical personnel who have worked with the student to provide the inservice.

Medical personnel can provide school staff members with information about the student's needs for occupational therapy, physical therapy, and speech therapy. They should alert school personnel to the importance of preventing another brain injury, the possible need to avoid contact sports, the need to avoid illegal drugs and alcohol, driving limitations, and any contraindications to therapy and participation in physical education. Medical personnel can also provide referrals that are necessary for school services, such as a physician's referral for occupational therapy.

Figure 6 ■

Twenty Objectives for Medical Treatment Teams Helping Re-integrate a Student*

Initially

1. Establish key school and medical contacts.
2. Collect formal and informal records of child's pre-injury status. Request school books and assignments.
3. Establish parameters of child's former school day, routines, and curriculum.
4. Begin informal discussion of traumatic brain injury and possible outcomes.
5. Discuss program and placement options and range of ancillary services available.

During Admission

6. Provide regular update on progress and projected program and service needs.
7. Arrange for school and hospital on-site visits for medical and educational treatment teams.
8. Assess school's physical layout and potential barriers.
9. Determine need for inservice training, consultation, and peer preparation.
10. Discuss projected re-entry time frame.
11. Prepare family for the school re-entry process and child's projected service needs.
12. Conduct multidisciplinary assessment at Rancho Level VI or during the last month of hospitalization.
13. Refer for special education services, if appropriate.
14. Establish requirements for, and the date of, the school eligibility meeting.
15. Forward medical, psychological, educational, sociocultural, and specialized therapy evaluation summaries at least two to three weeks prior to anticipated discharge. Provide videotape of recommended behavioral management, therapeutic, and instructional techniques.

Prior to Discharge

16. Participate in school's eligibility meeting and individualized education program development.
17. Facilitate identified inservice training, consultation, and peer preparation needs.
18. Determine child's school-based re-entry case manager.
19. Participate in the coordination of school- and community-based services and outpatient therapy.
20. Establish follow-up schedule and postdischarge contacts.

---

*Reprinted with permission from *Head Injury in Children and Adolescents* by Vivian Begali.

Figure 7

Twenty Questions for School Personnel to Consider for Students with Traumatic Brain Injury*

1. What type of injury did the child sustain? (open or closed)
2. What was the extent of the damage? (mild, moderate, severe)
3. What areas of the brain were compromised?
4. How long was the child unconscious?
5. When did the injury occur? How old was the child at the time?
6. What was the child's estimated cognitive and educational status before the injury?
7. How long after the injury was the assessment conducted?
8. What notable sensory impairments does the child exhibit?
9. What motor impairments prevail and how will this impact the child's ability to function within the academic setting?
10. What are the child's predominant cognitive, physical, academic, and behavioral problems?
11. What are the child's strengths? Which functions remain intact?
12. How long is the child's attention span?
13. What specialized equipment will the child need?
14. What personal assistance will the child require?
15. Does the child require medication?
16. Is the child at risk for seizures?
17. What safety precautions need to be taken?
18. What special concerns do the child's parent have?
19. Can the child's needs be addressed within the regular classroom?
20. Does the child qualify for special education and ancillary services?

Reprinted with permission from *Head Injury in Children and Adolescents* by Vivian Begali.

Medical discharge summaries from the physician and therapists, along with the neuropsychological assessment, are useful during the multidisciplinary team process. School team members, however, should provide ongoing assessment to accurately reflect physical, psychosocial, and cognitive changes the student may experience after initial re-entry (Ewing-Cobbs, Fletcher, and Levin, 1986; Carter, 1993).

Medical and school personnel also should evaluate how the following variables affect the student's learning:

- the environment (noise levels, distractions),
- scheduling (time of day, attention, consistency), and
- instructional aids (assignment notebooks, outlines of lectures, worksheets, computer-assisted instruction, calculators, tape recorders, augmentative communication system) (Ylvisaker, 1991; Florida, 1993).

The medical team and school team benefit from collaboration throughout the student's first year of recovery. Medical team members will benefit from an understanding of the student's performance, both academic and social, and school team members can use ongoing medical data to develop and revise goals and objectives in the student's individualized education program.

Medical and school personnel also should discuss the student's physical, psychosocial, and cognitive status and his or her needs, including strengths, limitations, and recommendations. The student's understanding of his or her capabilities is another crucial factor. Although the student may have an inability to perceive areas of deficits, the student's agreement and cooperation is essential (Ylvisaker, 1986).

Transition within the School

The student with a traumatic brain injury may face various transitions throughout his or her school career. Progression from one grade level to the next and advancement from elementary school to middle school and then on to high school present new challenges to the student and the school district. To assist in these transitions, the school case manager and other school personnel need to assess

- staff members' needs for inservice about traumatic brain injury and the individual students' status and needs,
- fellow students' needs for inservice about traumatic brain injury and the individual student's status and needs,
- accommodations for physical barriers or challenges,
- assistive technology,
- mobility issues,
- student's stamina and fatigue,
- continued support mechanisms, and
- opportunities for extracurricular recreational activities.

Postsecondary Options

Life after high school is a challenging transition for the student with a traumatic brain injury. This is an opportunity to anticipate

- postsecondary education,
- vocational training,
- employment (competitive and supported),
- independent living,
- community participation, and
- continuing adult education.

The Individuals with Disabilities Education Act specifically mandates that transition services be incorporated in eligible students' individualized educational programs no later than age 16. Educators should help the student identify personal preferences, knowledge, skills, and abilities so that the student, family members, and school personnel can develop a program that prepares that student for the future. Through linkages with community agencies, school members also assist in making this a successful transition (see Appendix C).

References

Begali, Vivian. *Head Injury in Children and Adolescents: A Resource and Review for School and Allied Professionals*. 2nd ed. Brandon, VT: Clinical Psychology Publishing, 1992.

Carter, Susanne. *Traumatic Brain Injury: The Role of Schools in Assessment*. Eugene, OR: Western Regional Resource Center, 1993.

Ewing-Cobbs, L., J.M. Fletcher, and H.S. Levin. "Neurobehavioral Sequelae Following Head Injury in Children: Educational Implications." *Journal of Head Trauma Rehabilitation* 1(4), 1986, pp. 57-65.

Florida Department of Education, Division of Public Schools, Bureau of Education for Exceptional Students. *What We Know About Educating Students with Traumatic Brain Injury*. Tallahassee, FL, 1993.

National Head Injury Foundation, Inc. *An Educator's Manual: What Educators Need to Know About Students with Traumatic Head Injury*. Framingham, MA: National Head Injury Foundation, Inc., 1985.

Rosen, C.D., and J.P. Gerring. *Head Trauma: Educational Reintegration*. San Diego: College Hill Press, 1986.

Ylvisaker, Mark. "Language and Communication Disorders Following Pediatric Head Injury: Managing Transition from Hospital to School." *Journal of Head Trauma Rehabilitation* 1(4) 1986, pp. 48-56.

Ylvisaker, M., P. Hartwick, and M. Stevens. "School Re-entry Following Head Injury: Managing Transition from Hospital to School." *Journal of Head Trauma Rehabilitation* 6(1) 1991, pp. 10-22.

4

Planning A Special Education

Both federal and state legislation require school districts to provide students with disabilities a free, appropriate public education, which includes special education and necessary related services.

Federally, the Individuals with Disabilities Education Act considers a traumatic brain injury a disability. Subchapter V, Section 115, Wis. Stats, considers a traumatic brain injury a handicapping condition. According to Section 115, if a student has a handicapping condition and requires special education, the student has an exceptional educational need.

PI 11, Wis. Adm. Code implements Section 115. The processes and procedures outlined in PI 11 (see Appendix D) are distinct, yet related, steps in determining eligibility and appropriate programming for special education to meet students' exceptional educational needs. Students are referred for evaluation by a multidisciplinary team. If the team finds a student eligible, the school develops an individualized education program and placement offer for that student.

Parents, teachers, and physicians may refer a student with traumatic brain injury, or any of the other specified disabilities, for a school district's special education services. Other referrals result from screenings.

Screening

Screening is an ongoing system for identifying students who may need referrals for additional services, including special education. Many parents are familiar with the screening done before kindergarten. Screening of the preschool student with traumatic brain injury may be the first time that anyone considers the impact a brain injury may have on a young student's education. During that screening, school personnel may identify the student's needs in language skills, academic readiness, motor development, social emotional behavior, and activities of daily living. Federal law requires each public agency to have procedures that insure that all students who have disabilities and are in need of a special education are identified, located, and evaluated.

State law requires school districts to screen for suspected exceptional educational needs in

- students younger than school-entry age,
- students entering school for the first time,
- students currently enrolled in public and private schools,
- all transfer students, and
- school-age students eligible to attend school but who are not attending and are district residents (this applies generally to those students who have withdrawn or dropped out of school).

The needs of a school-age student with a traumatic brain injury may be screened by the observations and testing programs of the classroom teacher. This screening may identify challenges that the student is newly experiencing. For example, the student may have progressed well in school until required to perform analytical problem-solving skills not called upon in previous grade levels. The deficit caused by an earlier traumatic brain injury now affects the student's academic performance.

Screening may accomplish several educationally sound purposes. It can

- foster experiences that enhance the growth of students through early identification of strengths and deficit areas;
- prevent educational failure by using identified strengths to compensate for identified weaknesses;
- involve parents, child-care providers, and teachers in an ongoing concern for the health and educational well-being of the student; and
- facilitate the early identification of students who may be appropriate for a referral.

It is vital that school personnel involve parents in the screening process. Parents can provide information about the student's traumatic brain injury and the effect of the injury on home and community living. Parents also can help school personnel obtain pertinent medical information by signing release forms and giving the names and addresses of health care providers. When school personnel include parents as part of the process, it increases parents' understanding and may help them feel more comfortable with school programs.

Referrals

The successful return of a student with a traumatic brain injury to the educational setting depends upon careful planning by school administrators, school staff members, medical professionals, the student, and the student's family. Medical personnel should begin the referral process as soon as possible following the student's brain injury. Prompt referral benefits the student and the district because often complex preparations are necessary.

If a student is being referred from a county Birth To Three Program, the student should be referred by the age of two years and nine months. If the student has multiple needs, the school and Birth To Three Program may need to coordinate services before that age.

Section 115.80(a), Wis. Stats., requires that licensed personnel working in the public school refer a student if they have reasonable cause to believe that a student has an exceptional educational need. The law also requires that a physician, nurse, teacher at a state or county residential facility, psychologist, social worker, or administrator of a social agency who has reasonable cause to believe that a student has an exceptional educational need must report the student to the school. The parents must be notified before a referral is made.

All referrals must be in writing and must state the reason for the referral. When a school district receives a referral, it must send a "Notice of Receipt of Referral" to the student's parents. The referral notice must include a statement of the procedural safeguards available to the parent and student with respect to special education.

Parents also may refer a student. If a parent suspects that the student has an exceptional educational need, the parent should talk with the student's teacher, principal, guidance counselor, or director of special education about the student's needs. The school staff members will help the parent make the referral.

Parents cannot stop someone, such as a teacher, from referring their student if that person feels there is reason to believe the student may have an exceptional educational need. Section 115.80(b), Wis. Stats., requires that teachers refer a student. This applies even if the parent objects.

Schools must process every referral made regarding a student who is a resident of the district and who has not graduated from high school. Only the parents can stop a district from evaluating a student by refusing to consent to the evaluation. However, the school district may initiate a hearing to override the parents' refusal.

Many schools have pre-referral intervention or assistance teams to help identify and implement interventions in the regular education environment. No one, including members of these teams, may block a referral or otherwise prevent someone from making a referral, but the teams can serve to document the modifications and adaptations already attempted. Figure 8 illustrates the timeline for the referral process.

The school has 90 days from the time it receives the referral to evaluate the student, develop an individualized education program, and offer placement for the student who is found to have an exceptional educational need. Students found not to have exceptional educational needs may be referred for other services.

Determination

After a student is referred to the school district for special education, a multidisciplinary team determines if the student has an exceptional educational need. Section 115.80(3)(a), Wis. Stats., and PI 11.04(b)2, Wis. Admin. Code, require multidisciplinary teams to consist of at least two people; however, usually more are involved.

The team must include a teacher licensed in the student's suspected disability. However, Wisconsin does not license special education teachers in the area of traumatic brain injury. When a school district receives a referral for a student with a traumatic brain injury, the district must appoint a person who is skilled in assessing and programming for a student with a traumatic brain injury. This may be a teacher with experience working with other students with traumatic brain injury; a teacher who has attended conferences or inservices on traumatic brain injury; or a teacher licensed in another area of disability, and whose certification, background, and experience may be appropriate for assessing the student's needs.

For example, a student with a traumatic brain injury may demonstrate behaviors that interfere with learning and may be appropriately evaluated by a teacher certified in the area of emotional disturbance. The district may use one of its own employees in this role or may contract with a consultant to assess the student's needs.

Other team members may include, but are not limited to

- special education teachers,
- regular education teachers,
- school psychologists,
- school nurses,
- school occupational therapists,
- school physical therapists,
- speech and language pathologists,
- adaptive physical education teachers,
- school social workers, and
- counselors.

In most cases of traumatic brain injury to students (particularly moderate and severe injuries), medical personnel will have diagnosed the brain injuries through medical evaluation before the student returns to school.

Often, the first purpose of an educational assessment is measuring the impact of injury on the student's educational performance to determine whether the student is eligible for special education services. According to PI 11.35(2)(j), Wis. Admin. Code, the effects of traumatic brain injuries may be seen in academic and non-academic areas, namely

- cognition;
- speech and language;
- memory;
- attention;
- reasoning;
- abstract thinking;
- communication;
- judgment;
- problem solving;
- sensory, perceptual, and motor abilities;
- psychosocial behavior;
- physical functions;
- information processing; and
- executive functions.

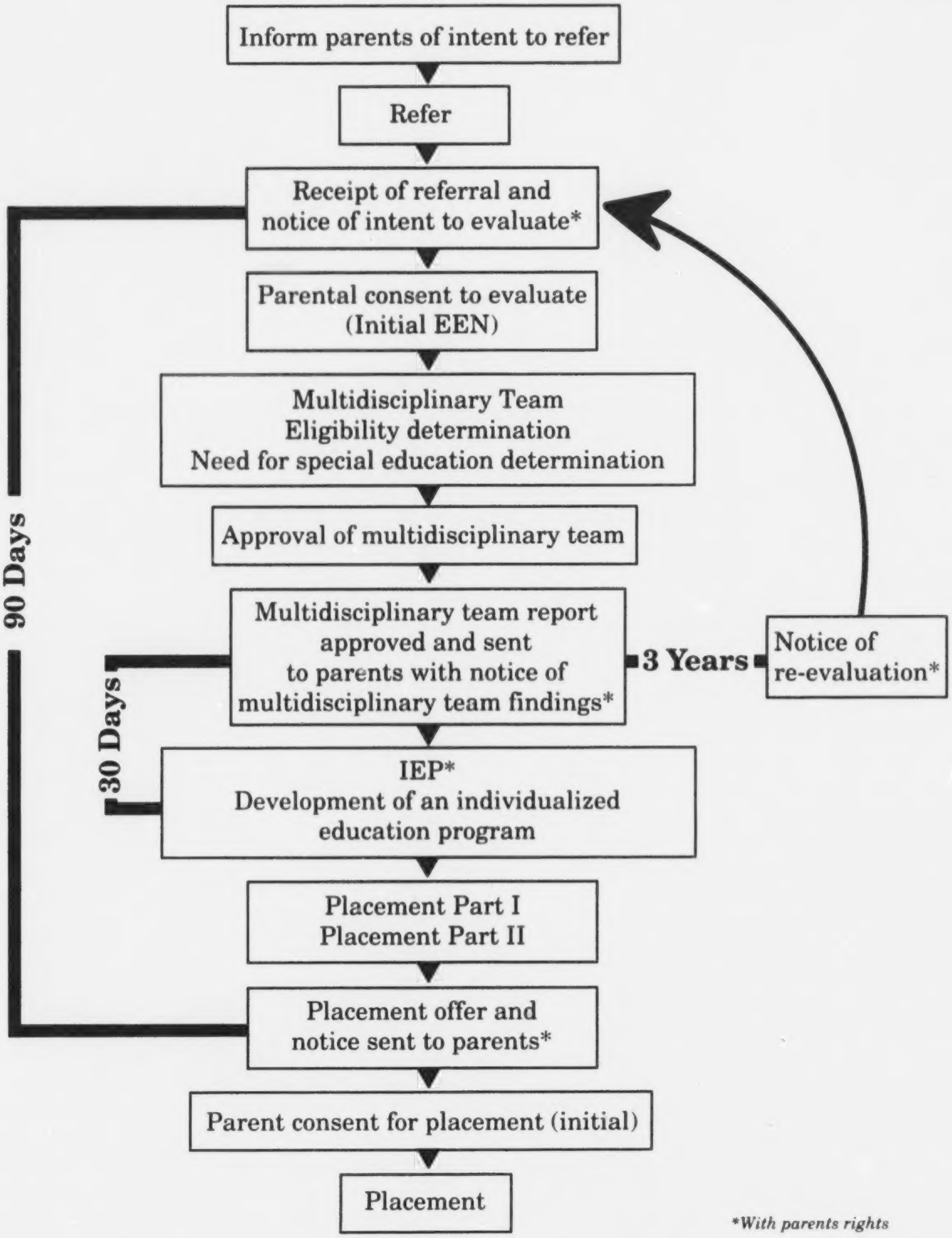
Members of a multidisciplinary team consider total or partial functional disability in any of these areas that adversely affect a child's educational performance as constituting a handicapping condition called traumatic brain injury and warranting a special education. It is important to note that once a student meets the eligibility criteria for the handicapping condition called traumatic brain injury and then is determined to need special education, the student does not need to meet eligibility criteria for other handicapping conditions (for example, learning disabilities) in order to access those services.

The Wisconsin definition of traumatic brain injury further notes that in determining eligibility for special education services, team members must consider the limitations in reliability and validity of some assessment methods and must use appropriate assessment approaches.

If the multidisciplinary team concludes that the student is a student with an exceptional educational need, the team recommends related services the student may need. If team members discuss the student's need for occupational therapy or physical therapy, the report must include the team's conclusions regarding that need and a statement that documents the reasons for the service.

Figure 8

Referral Process


Inform parents of intent to refer
Refer
Receipt of referral and notice of intent to evaluate*
Parental consent to evaluate (Initial EEN)
Multidisciplinary Team Eligibility determination Need for special education determination
Approval of multidisciplinary team
Multidisciplinary team report approved and sent to parents with notice of multidisciplinary team findings*
3 Years
Notice of re-evaluation*
IEP* Development of an individualized education program
Placement Part I Placement Part II
Placement offer and notice sent to parents*
Parent consent for placement (initial)
Placement
90 Days
30 Days

**With parents rights*

If team members conclude that the student does not have an exceptional educational need, the team report must include

- an identification of the student's non-exceptional educational needs (PI 11.04(5)(b)1);
- referral to any district programs, other than special education programs, that may benefit the student; and
- information about any programs and services, other than those offered by the district, that team members believe may benefit the student.

According to PI 11.35(2)(j)4, Wis. Adm. Code, before members of a multidisciplinary team may identify a student as having a traumatic brain injury, they must consider available medical information. The medical case manager or physician may provide this information. Often, the medical case manager or other medical personnel have important information about the child and results from assessments of the student's abilities that can be extremely helpful in planning and carrying out educational assessments and planning educational programming.

Prior to the meeting, team members must examine all relevant available data, including records of previous and current educational performance, health, and social behavior.

A student does not need a medical diagnosis of a traumatic brain injury to be eligible for special education services. Team members must determine only if the student meets the educational criteria of a traumatic brain injury in PI 11.35(2)(j) and whether the student needs a special education (see Chapter 2).

To determine if a student has exceptional educational needs, multidisciplinary team members may consider an existing medical diagnosis of a traumatic brain injury from a licensed physician or documentation at the time of referral. In the absence of such information, school personnel may obtain, if necessary, an evaluation by a licensed physician. Such an evaluation would be a related service and therefore must be provided at no cost to the student's parents. Even without a diagnosis of a traumatic brain injury, team members may decide—based upon history, behavioral observations, and evaluation results—that the student meets the eligibility criteria of a traumatic brain injury in PI 11.35(2)(j).

Developing an Individualized Education Program

After a multidisciplinary team determines that a student has a handicapping condition and needs special education, the school staff and the student's parents develop a plan for an individualized education program for the student. The plan is a dynamic, working document that school personnel must implement as written. Section PI 11.05, Wis. Adm. Code, defines the requirements (see Appendix D).

The individualized education program is a cooperative effort of the parents and the school. School staff members must attempt to arrange planning meetings at a time and place agreed upon by the school and the parents and should do their best to help prepare parents for meeting with the individualized education program planners (see Appendix E).

The Purpose

The individualized education program is the heart of federal and state special education legislation. Even though school districts are not required to meet the projected goals, districts are required to provide the services and specially designed instruction indicated by each student's individualized education program. The document's six purposes are

- to serve as a communication vehicle between parents and school personnel,
- to provide an opportunity for resolving differences concerning the student's needs,
- to represent a commitment of district resources to enable the student to receive needed services,
- to serve as a management tool by which special education and related services appropriate to special learning needs can be tracked,
- to serve as a compliance and monitoring document from which to determine whether or not the student is actually receiving the free and appropriate public education agreed to by the school district and the parents, and
- to serve as an evaluation device to help determine the student's progress toward projected outcomes (*Federal Register*, 1992).

The Participants

A team of individuals develops the individualized education program. The team includes a representative of the school board, other than the student's teacher, who is qualified to provide or supervise the provision of special education; the student's teacher; one or both the student's parents; and the student, if appropriate.

If the process was initiated because of an initial eligibility determination, a member of the multidisciplinary team or someone knowledgeable about the evaluation of the student must attend. If the purpose of a meeting is the consideration of services needed for transition to post-high school activities, then the student and representatives of agencies likely to provide or pay for transition services must participate.

At least one person participating in the meeting must be qualified in the student's area of disability. Because Wisconsin does not provide teacher licensure in traumatic brain injuries, the district's director of special education or special education program designee needs to consider the skills of the special education teachers and other staff members to determine who possesses the necessary qualifications. This may be a teacher with experience working with other students with traumatic brain injuries, a teacher who has additional training in traumatic brain injury, or a teacher licensed in an area of disability that relates to the types of impairments the student is experiencing.

Components of an Individualized Education Program

The individualized education program must be developed before the student is placed in special education. It must include a statement of

- the student's present levels of educational performance;
- annual goals, including short-term instructional objectives;
- the extent to which the student will be able to participate in regular education programs;
- the specific special education and related services, including assistive technology services or devices, if appropriate, to be provided to the student;
- the projected date for initiation of services and the anticipated duration of the services;
- appropriate objective criteria and evaluation procedures and schedules for determining, on at least an annual basis, whether the short-term instructional objectives are being achieved;
- if the student has a visual handicap, a statement indicating whether the student needs to be taught Braille. If the student does not need to be taught Braille, a statement to that effect and the basis on which the determination was made; and
- transition services for students age 16 and older (younger if appropriate). Appendix C discusses transition services in more detail.

School staff members developing the individualized education program must consider the parents' suggestions. The parents do not have to consent in writing to the program, but the school staff members may ask the parents to sign the program plan to document that the parents attended the meeting.

For related services, the individualized education program must include the amount, frequency, and duration appropriate for that service stated in a manner that is understandable to parents. For example, physical therapy for 60 minutes at least once per week for the school calendar year; occupational therapy for five hours at least one time per month for the first semester.

Once the individualized education program is developed, the amount of service provided cannot be changed without conducting another meeting. However, as long as there is no change in the overall amount, some adjustments in scheduling the services should be possible without holding another meeting. Parents should be notified when this occurs. Occupational therapy and physical therapy cannot be part of the individualized education program unless recommended first by the multidisciplinary team.

Goals and objectives for regular education are not required in an individualized education program; the extent of participation in regular education is sufficient. If, however, modifications to the regular education program are necessary to insure a student's participation, the individualized education program must describe the modifications.

The student's individualized education program may include information about assistive technology devices and services such as special education, related services, or supplementary aids and services in the student's regular education classroom. For example, handwriting for a student with a traumatic brain injury may be too slow and laborious, so the student will need a computer to do written assignments. In PI 11.02 (1m), "assistive technology device" means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of students with exceptional educational needs (see Appendix H).

Considerations

Modifications in Physical Education or Vocational Education

If a student's physical education or vocational education program is specially designed, the individualized education program must include appropriate annual goals and short-term instructional objectives. It is not appropriate to use the individualized education program to excuse or exempt a student from physical education.

Participation in Statewide Testing

A blanket policy automatically removing all special education students from 8th and 10th grade statewide testing is not appropriate; the decision needs to be individualized. For a student with a traumatic brain injury, the individualized education program may address modifications such as giving more time to complete tests, allowing a student to give oral responses, reducing the amount of testing, and allowing the student to use a calculator.

Transportation

If a student requires special transportation, the individualized education program must include this related service. However, school personnel may not be able to make this determination until after making placement decisions. The transportation then is added to the individualized education program. The individualized education program also must include information about any special equipment that is required, such as a vehicle with a wheelchair lift or an aide for a medically fragile student with traumatic brain injury.

Emergency Procedures

School personnel may need to develop individualized safety plans for a student with a traumatic brain injury. Individualized plans may be needed for fire drills and alarms, tornado drills and alarms, bomb threats, shortened school days due to inclement weather, power outages, medical emergencies, and building "lock downs."

To get a student to safety in an emergency, school personnel should decide who is responsible for knowing where the student is at all times. The plan should include an alternate to cover the instances when individuals who are responsible for a student aren't available. Because elevators are not used during emergencies, specific plans are required for students in wheelchairs in multistory buildings.

Scheduling

If a student with a traumatic brain injury is unable to physically tolerate a full school day, the individualized education plan must address this issue. A student with a traumatic brain injury may require a shortened school day or a modified schedule.

The student's altered schedule needs to be reevaluated frequently with a goal of returning to a full-day schedule. If participants can predict these changes, the changes can be included in the individualized education plan. For example, September through Nov. 1, morning sessions only; Nov. 1 through Dec. 31, early dismissal at 2 p.m.; and Jan. 1 to the end of the school year, full schedule.

Extended School Year

Extending a student's school year is seen as providing "special education and related services" pursuant to an individualized educational program. A student with a traumatic brain injury may require special education and related services in order to receive a free appropriate public education (FAPE). When deciding whether the student with a traumatic brain injury requires an individualized education program for an extended school year, participants may consider the

- degree of impairment,
- student's rate of progress,

- critical time to work on an emerging skill,
- loss of academic and non-academic skills that occurs during the summer,
- areas of the student's curriculum which need continuous attention,
- availability of alternative resources,
- student's vocational needs,
- ability of the student to interact with nonhandicapped students, and
- student's behavioral and physical problems.

The fundamental issue in determining eligibility for an extended school year is regression during an interruption in services and limited recoupment after services resume.

A student with a traumatic brain injury may require only related services (for example physical therapy or occupational therapy) as the sole component of an extended school year program. Planners of the individualized education program must consider whether, without the extended school year related services, the student would encounter significant regression-recoupment problems in the student's special education program in the fall.

The individualized education program must include details about a student's extended school year program, including the beginning and end dates for the program and the nature and amount of services to be provided.

Reviewing the Individualized Education Program

A school district must ensure that each student's individualized education program is reviewed at least annually. Because a student with a traumatic brain injury may experience rapid and unpredictable changes, school personnel may need to review and update the student's individualized education plan more often or on an as-needed basis. Participants should consider meeting on a planned schedule; for example, every two months for at least the first year following a traumatic brain injury. A parent also may request a review of the student's individualized education program.

Placement

The Individuals with Disabilities Education Act requires that, to the maximum extent appropriate, students with disabilities, including those in public or private institutions and other facilities, are educated with students who are not disabled. Also, the law requires that special classes, separate schooling, or other removal from regular educational environment occurs only when the nature or the severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. Because regular class placement may not be appropriate for every student, a range of programming options, known as a continuum of alternative education placements, must be available. The school district must select the least restrictive option on the continuum in which the student's individualized education program can be implemented.

The educational placement of each student with a disability must be determined at least annually and be based upon his or her individualized education program. The school district must ensure that, to the maximum extent appropriate, each student with a disability participates with nondisabled peers in nonacademic services and extracurricular activities. This requirement is especially important for students whose educational needs require interacting solely with disabled peers for most of each day. Nonacademic services and extracurricular activities may include meals, recess periods, counseling services, athletics, health services, recreational activities, special interest groups or clubs, referrals to agencies that provide assistance to individuals with disabilities, and employment of students, including employment by the district and assistance in making outside employment available. The extent to which a student will participate in the regular education program, including participation in nonacademic and extracurricular activities, must be based upon the student's needs and determined by the team that develops the student's individualized education program and placement offer.

In determining the student's educational setting, the district should consider the educational benefits available to the student within each option, the nonacademic benefits to the student from interacting with nondisabled peers, and the degree of disruption of the education of other students. The choice of a particular option may not be based solely on such factors as severity of disability, for example, an intelligence quotient; availability of related services, functional curricula or space; category of disability; perceived attitudes of regular education staff or students; the configuration of the delivery system; or administrative convenience.

After school personnel develop an individualized education program for a student with exceptional educational needs, they must develop a placement offer to implement the student's individualized education program. The placement must be consistent with requirements for "least restrictive environments." A group of people named by the director of special education or special education program designee develops the first part of the placement offer, which includes the delivery model and level. As group members make their decision, they must consider and document any potential harmful effect on the student or on the quality of services that the student needs. The second part of the placement offer is developed by a group that includes the district's special education director or special education program designee. This part of the placement offer includes the location at which the special education services will be provided.

Placement for students with traumatic brain injuries presents new challenges for school districts. School personnel must remember that a student's placement is based on the student's individualized education program, not on the category of the student's disability. If a student with a traumatic brain injury is placed in a class for students with learning disabilities to meet the student's individualized education program, the student does not need to meet the eligibility criteria for a learning disability. Likewise, a teacher who has a license in another disability area, such as cognitive disability or emotional disability, may serve the student with a traumatic brain injury. Again, the student does not need to meet the criteria for these disabilities to receive services.

Other Options

Students who do not qualify for special education under the Individuals with Disabilities Education Act may qualify for services in Section 504 of the Rehabilitation Act of 1973. This federal civil rights law provides protections against discrimination to people with disabilities. However, neither the state nor federal government provides funding for the implementation of this law.

Section 504 requires school districts to provide students with disabilities equal opportunity to access, benefit, and participate in their school programs and activities. For example, for a student with a traumatic brain injury who has physical impairments, the district may need to evaluate the accessibility of the restroom, including clearances through doors, stall size, stall doors that open outward, grab bars and rails, proper sink and towel dispenser height, and emergency assistance switches.

Section 504 also may require a school district to provide eligible students with a free appropriate public education, including the provision of regular and special education and related aids and services. In the regulations implementing Section 504 (34 CFR 104. 3(j)(ii), if a student is suspected of having a disability, then the district must

- evaluate the student to determine if the student is a handicapped person who has a physical or mental impairment that substantially limits one or more major life activities, has a record of such an impairment, or is regarded as having such an impairment; and
- determine if the impairment substantially limits a major life activity, including caring for oneself, performing manual tasks, walking, seeing, hearing, breathing, learning, and working.

Each district identifies a Section 504 Coordinator. For more information, contact the local coordinator or the Department of Education, Office of Civil Rights. The Region V Office is located at 111 North Canal Street, Chicago, Illinios, 60606.

References

Boreson, Lynn. *A Programming Guide for Emotional Disturbance.* Madison, WI: Wisconsin Department of Public Instruction, 1994.

Federal Register, Vol. 57, No. 208, 34 CFR. Appendix C to Part 300, October 27, 1992, pp. 48695.

Wisconsin Department of Public Instruction. *The EEN Triangle of Support: A Guide for Parents.* Madison, WI: Wisconsin Department of Public Instruction, 1993.

Wisconsin Department of Public Instruction. *Parent and Child Rights in Special Education.* Madison, WI: Wisconsin Department of Public Instruction, 1992.

Assessing Educational Needs

5

The cognitive and academic assessment of students with traumatic brain injuries can be challenging, even to experienced educational professionals. Following a traumatic brain injury, students display learning and behavioral profiles that significantly affect classroom performance. At other times, students' cognitive and academic difficulties are not readily apparent, and educators mistakenly assume that students are functioning normally.

The educator assessing students with traumatic brain injuries needs to understand what factors to evaluate, the conditions under which assessments take place, and assessment approaches. Also, the educator must understand how to interpret assessment findings and translate them into applicable intervention recommendations.

Students with traumatic brain injuries are likely to display important learning characteristics that set them apart from typically developing students and from students with other disabilities. Educators should consider these characteristics as they plan and carry out an educational assessment. The following characteristics often are seen in students following traumatic brain injuries:

- learning rate varies over time;
- difficulty with new learning;
- specific difficulties with memory, concentration, and attention;
- uneven skill profile, with some lower-level skills lost and higher-level skills preserved (academic scatter);
- reduced executive functions that limit the ability to identify goals, carry out plans, and anticipate events; and
- performance highly influenced by physical state and environmental conditions.

Assessment Goals

Usually, educational assessments of students following traumatic brain injuries are designed to meet one or more of the following goals:

- assist in determining eligibility for special education services (see Chapter 4),
- identify the student's needs and determine how those needs will affect the student's performance across school settings, and
- evaluate the student's progress and the efficacy of the intervention.

The second goal of educational assessment of a student following a traumatic brain injury is identifying the student's needs so that school personnel can design effective interventions. To provide useful information (beyond documenting eligibility for services), the educational assessment must identify the student's preserved abilities and acquired limitations and determine how the student's learning profile might influence performance. An effective educational assessment considers three sources of information in identifying student needs:

- within-student factors,
- student-environment interactions, and
- student-instruction interactions.

Following a traumatic brain injury, particularly in the early stages after the injury, students may recover some abilities quickly. Within-student factors change as the student recovers, allowing students to out-grow some supports and require others. It is important to evaluate these within-student factors regularly as the student recovers and further develops.

However, student performance is affected also by the interaction among student characteristics, the learning environment, and instructional components. Careful evaluation of each of these factors, listed in Figure 9, allows the educator to identify influences on student performance and the strategies, modifications, or interventions that will be most effective.

The third goal of assessment of students following traumatic brain injury is obtaining baseline data for measuring student progress. Assessment over time allows the educator to document student progress and ongoing needs and to evaluate the efficacy of specific interventions.

Planning the Assessment

Planning an effective, informative educational assessment of a student with a traumatic brain injury requires that educational staff members understand

- what the student was like prior to injury. The student's prior skills, needs, personality, temperament, and support systems may continue to affect his or her functioning following injury.
- the nature and extent of the student's injury. This information allows the educator to appreciate the major new limitations the student may experience.
- the limitations the student exhibits that may affect his or her ability to participate in an evaluation. These might include lowered arousal or alertness, fatigue, short attention span, limited language, perceptual or sensory difficulties, decreased motor control, or limited insight into disabilities.
- problems or limitations that are most likely to affect the student's school performance. This knowledge will help the educator focus the evaluation on areas of anticipated need and on potential interventions to evaluate.

In planning an educational assessment, educators assemble pre-injury records, assemble medical records, contact the student's family, visit the student, coordinate with team members, and determine when to begin assessment.

Assembling Records

The student's pre-injury abilities, classroom performance, temperament and personality, and social and behavioral skills may continue to affect his or her school functioning following injury. Knowledge about these factors helps educational team members document a baseline level of functioning for measuring student progress.

Students returning to school following traumatic brain injuries may arrive having experienced a range of types of care, including

- medical evaluation in an emergency room,
- acute-care hospitalization, and
- stays in a rehabilitation setting.

The educator must assemble the student's medical records from these facilities. However, school personnel must first obtain permission from the parent or guardian. If the student has experienced an inpatient hospital or rehabilitation stay, medical personnel likely have conducted in-depth evaluations of the student's skills. By coordinating efforts with the medical facility, duplication of testing can be avoided.

Reports from these evaluations generally document the nature and extent of the student's injury and its impact on the major areas of functioning. Medical records also may give educators insights about limitations the student may face that may not be apparent upon observation. For example, the student may have decreased judgment about danger or may have specific perceptual problems that significantly influence classroom performance.

Many students returning to school following traumatic brain injuries will have had neuropsychological evaluations in acute-care or rehabilitation settings. In most neuropsychological assessments, an examiner administers a series of standardized tests to an individual and then compares the individual's performance to performance of the normative group. Neuropsychological batteries may have comparison norms for typically developing individuals and individuals with brain injury. Some of the measures included in neuropsychological batteries have been specifically developed to evaluate individuals with known or suspected brain injuries. However, other measures not specifically developed for neuropsychological assessment, such as cognitive assessment tools, may also be included in neuropsychological assessment batteries.

The primary goals of neuropsychological assessment are evaluating the specific domain of cortical brain functioning, clarifying brain-behavior relationships that affect an individual's daily life functioning, and providing information useful for planning interventions and predicting outcomes. Domains of functioning generally assessed include attention, concentration, memory, execu-

Figure 9

Educational Assessment Considerations

Within-student Factors

- arousal
- attention
- memory
- endurance/fatigue
- visual perception
- auditory perception
- new learning skills
- planning abilities
- organization
- academic skills
- mood
- insight
- problem solving skills
- social adjustment
- abstract reasoning
- communication
- cognition
- motor skills
- self-care skills
- psychosocial adjustment
- behavioral control
- motivation
- self-concept
- language

Environmental Factors

- class size
- schedule
- consistency of staff
- cues or prompts
- student-to-staff ratio
- routines
- noise
- transitions
- lighting
- peer models
- space
- adult emotional support
- temperature
- peer support
- accessibility
- frequency of reinforcement
- degree of structure
- student independence

Instructional Factors

- task level
- task adaptations
- expectations
- time limitations
- student success rate
- materials
- visual demands
- task performance
- auditory demands
- task clarity
- memory demands
- task familiarity
- attentional demands
- task interest
- task length
- shifts in activities
- reading level
- frequency of feedback
- type of instruction
- frequency of review
- teacher support
- amount of guided practice
- peer support
- test format
- parent support
- accountability
- measurement of progress

tive functions, language, problem solving, abstract thinking, sensory and perceptual skills and motor skills. These assessments differ from more traditional psychological assessments in their attention to higher-level cognitive processing, comparisons of motor and sensory information from left and right sides of the body, and ability to detect changes in brain functioning over time. Many traditional psychological and educational measures provide only general evaluation of cognitive abilities and are less sensitive to higher-level processes. These tests may measure preserved abilities more than new learning abilities and may underestimate the extent of impairment.

Sometimes medical records are filled with technical medical language that may be new to educators. The terms that are used in medical records describing traumatic brain injuries often describe specific impairments that may strongly influence school performance. For example, neuropsychological reports may describe language, motor, perceptual, behavioral or affective difficulties the student is encountering. Definitions for commonly used medical terms related to traumatic brain injuries are found in the glossary.

Contacting the Family

School personnel should begin to form a relationship with the family prior to the evaluation and involve the family in the assessment process—particularly if the student has not been receiving special education services.

Many families become well-educated about traumatic brain injury during a child's hospitalization. These families have information about their child's recovery that may be helpful to school staff members.

If at all possible, visiting the student (in a medical setting or at home) prior to an evaluation is helpful for the educator. This allows the educator to begin to appreciate the student's strengths and needs and to begin establishing rapport with the student. Sometimes, when medical facilities are located far from the patient's home, medical staff members (with permission from the parent or guardian) may videotape the student for viewing by school personnel.

Coordinating with Team Members

Working together is particularly important for educators planning assessments of a student with a traumatic brain injury. The student may have limited physical endurance or tolerance for testing; coordinating assessments eliminates unnecessary demands on the student. Working together, often team members can obtain multiple types of information during a single evaluation session.

In addition, team members may be able to supply each other with important information about the student's functioning or about needs that will affect him or her during assessment. For example, the physical therapist may inform team members about positioning or physical stamina and the speech and language therapist may identify the student's best communication response mode.

Determining When to Begin Assessment

In the months and years following a traumatic brain injury, generally a student makes significant progress toward recovery. Immediately following injury, a student's progress may be rapid. Assessment results obtained at this time may have limited usefulness for educational planning.

When planning an assessment of a student with a traumatic brain injury, the educator needs to determine the optimal time to begin assessing the student. Ideally, this is when the student's medical condition is stable, the student is able to participate in assessment, and results from the assessment will facilitate educational programming over the course of a few months.

Choosing Assessment Methods

One of the greatest challenges to educators assessing a student following traumatic brain injury is determining the assessment approaches that best suit the individual student and the goals of the evaluation. Because students with traumatic brain injuries may experience a wide range of cognitive impairments, educators need to consider the individual student's cognitive limitations when choosing assessment methods. To decide the methods that will be most appropriate and informative, the educator needs to be able to answer the following questions:

- What specific skills might I need to assess?
- What limitations might the student exhibit that will influence the assessment process?
- What approaches might I use and what will they tell me?

The student returning to school following a traumatic brain injury may display some learning problems similar to those of other students. The student also may display difficulties specific to the brain injury. Some of these deficits may not be apparent upon initial observation of the student. In fact, frequently the full impact of the student's injury becomes understood only after the student returns to school following traumatic brain injury and faces the complex learning and social challenges of the classroom.

A well-focused educational assessment can help the educational team appreciate the needs of the student and can prevent the student from placement in inappropriate or sometimes dangerous situations. Specific areas of difficulty that are often seen in students with traumatic brain injuries and may need to be assessed are listed in Figure 10.

Assessing students following a traumatic brain injury can draw upon several methods. Educators must carefully evaluate each approach to determine what it can offer, what limitations it presents, and how it relates to the goals of the assessment. Four major methods to cognitive and achievement assessment commonly used in school settings are norm-referenced cognitive assessment, norm-referenced academic assessment, direct performance assessment, and instructional environment assessment.

Norm-referenced Cognitive Assessment

Many evaluations of students suspected to have exceptional educational needs include a standardized, norm-referenced measure of intelligence. These measures may be useful with students following traumatic brain injuries. However, educators must consider several important factors when considering using these measures with students with traumatic brain injuries (see Figure 11). The most important factors are the reliability and validity of the tests, whether they test for preserved as opposed to new learning and higher-level abilities, and the test environment.

Reliability. Reliability can be thought of as consistency (Anastasi, 1988). Repeated administrations of the measure should provide similar results. Following a traumatic brain injury, a student's cognitive skills may change rapidly, particularly during the first years following injury. In addition, because students with traumatic brain injuries are highly influenced by environmental

Figure 10

Specific Cognitive Difficulties for Students with Traumatic Brain Injuries

Attention

- alertness
- speed of processing
- vigilance or concentration
- selectivity
- impulsivity

Memory

- remote
- recent
- immediate
- episodic
- semantic
- auditory
- visual

Executive Functions

- identifying a goal
- making a plan
- initiating action
- carrying out a plan
- evaluating performance

Sensory or Perceptual Deficits

- auditory
- visual
- tactile
- spatial
- temporal

Communication

- mode of communication
- reliability of communication
- verbal comprehension
- verbal expression

Problem Solving

- judgment
- abstract thinking
- reasoning

BEST COPY AVAILABLE

and internal physical factors, their physical or emotional states may change from moment to moment. These factors may decrease the reliability of test scores from students with traumatic brain injuries.

Validity. Educators consider several types of validity (for example, content, construct, concurrent, and predictive) in choosing assessment tools. In general, however, standardized assessment tools commonly used in schools have not been validated specifically for use with students with traumatic brain injuries (Ylvisaker, 1988). Consequently, the educator must carefully consider: "Does this measure assess what I want it to assess?"

Three aspects of norm-referenced cognitive assessments threaten the validity of assessments when used with students with traumatic brain injuries. First, when intelligence tests are standardized, the tests are given to children who are assumed to have generally intact neurological systems. For example, adequate arousal, attention, memory, and motivation are assumed present in children in standardization samples.

Differences in scores across a standardization sample are assumed to reflect differences in "intelligence," not differences in other interfering factors. However, students with traumatic brain injuries do not have typically functioning neurological systems. Their brain injuries may interfere with the basic processes, such as automaticity of processing, that allow them to perform multiple tasks (often simultaneously) during assessments (Guare, 1988).

Consequently, when students with traumatic brain injuries do poorly on intelligence tests, educators may have difficulty determining whether this is due to lowered intelligence (for example, less knowledge or slower learning rate) or to interfering, sometimes temporary, neurological factors. For example, a student who has difficulty defining a vocabulary word may have difficulty because of fatigue, distractibility, physical discomfort, temporary word-finding difficulty, lack of ability to initiate speech, or because the student actually does not know the meaning of the word.

Second, intelligence tests are intended to allow the examiner to sample from areas of knowledge (such as vocabulary) or performance (such as visual-motor skills) and then make assumptions about these domains at large. However, because of the "academic scatter" in knowledge and abilities often seen in students with traumatic brain injuries, educators cannot make the same assumptions about an area of functioning in a student with a traumatic brain injury based on limited information that they make with students who are developing typically.

For example, if a student attains a basal level on a test (provides a series of correct responses), the educator assumes that the student would correctly answer test items beneath this level. However, this may be an inaccurate assumption with students with traumatic brain injuries. Similarly, students with traumatic brain injuries may show preserved abilities above the "ceiling level" that is assumed after a series of incorrect responses on a test.

Third, intelligence test results are not as predictive of future performance in students with traumatic brain injuries as they are with students who are developing typically. Sometimes students with traumatic brain injuries have disabilities that become more apparent over time as higher-level skills that are expected to emerge fail to develop, and sometimes students continue to recover abilities during the rehabiliation process.

Preserved vs. new learning. Educators often use intelligence tests to measure and monitor the preserved skills of a student who has sustained a traumatic brain injury. These tests measure well-learned information (such as vocabulary or general knowledge) that is most resistant to loss following injury.

Certain subtests (such as Wechsler's information, vocabulary, object assembly, and picture completion subtests) measure skills that are less susceptible to the effects of brain injury and can be used as rough measures of prior abilities and preserved knowledge (Prigatano, Pepping, and Klonoff, 1986). Educators can use intelligence measures (for example, Wechsler's coding and block design subtests) to measure and monitor psycho-motor speed also, which is often significantly affected by a traumatic brain injury (Prigatano, Pepping, and Klonoff, 1986).

Intelligence tests are less useful, however, in measuring new learning abilities. Students may have significant difficulty acquiring new information in classroom settings despite fairly well-preserved previously learned skills.

Higher-level abilities. Another major concern regarding intelligence measures is their limited assessment of higher-level problem-solving skills and executive functions. These measures generally are not sensitive measures of specific higher-level functions (such as planning, initiation, anticipation, organization, goal-directed behavior, and abstraction) that are often interrupted by a traumatic brain injury. Average or above-average intelligence scores can be misleading because they may mask significant higher-level cognitive deficits that will interfere with the student's functioning in the school environment (Ylvisaker, 1989.)

Testing environment. A final major consideration in using intelligence tests with students with traumatic brain injuries is their ecological validity. Intelligence tests are usually administered in quiet, distraction-free environments in which there is a one-to-one interaction and frequent reinforcement. This environment may differ significantly from the classroom setting in which the student uses these skills. In fact, a structured testing environment and format may help the student with a traumatic brain injury to compensate for difficulties that will be apparent in the classroom (Ylvisaker et al., 1994).

Norm-referenced Academic Assessment

Many of the concerns about intelligence tests also apply to norm-referenced tools for academic assessment. These tools typically have limited reliability and validity with students with traumatic brain injuries. Often they measure preserved rather than new learning abilities and are administered in environments that differ substantially from the typical classroom.

In addition, norm-referenced academic measures may not reveal the full extent of the student's academic scatter. Norm-referenced academic assessment measures rest on the assumption that the presence of higher-level abilities presumes the presence of lower-level abilities. For students with traumatic brain injuries, this assumption may be invalid.

Many students with such injuries display a profile of abilities in which some higher-level skills are preserved while lower-level skills are disrupted. For example, a student may display a higher-level skill such as solving a simple algebraic equation without demonstrating a lower-level skill such as adding three-digit numbers.

Upon examination, educators might realize that these problems call upon different abilities. Often, however, if a student receives credit on a seemingly higher-level item on a norm-referenced measure, skills below a basal level may not be evaluated at all. Similarly, a student's strengths above a ceiling level may not be explored in norm-referenced academic testing.

Direct Performance Assessment

A third broad category of assessment draws upon classroom performance and products as the source of measurement. Classroom work samples, curriculum-based assessment, and homework are examples of direct performance assessment.

This assessment approach, like other forms of assessment, has advantages and limitations. The major strengths of direct performance assessment lie in the clear link between assessment findings and classroom instruction.

Because direct performance products represent the student's application of skills, they tell educators how the student is functioning in the real world of the classroom. For example, a teacher may measure a student's work completion rate in the classroom and find the student is only completing 20 percent of assigned work. The teacher may then adjust work demands, set goals with the student about work completion, systematically vary support strategies, and continue to monitor the student's rate of work completion.

With students with traumatic brain injuries, educators may find it useful to, in effect, inventory the skills the student displays and the conditions that help the student perform. Performance assessment facilitates this process.

For example, the teacher may note that a particular student can subtract two-digit numbers when the operation sign is highlighted, but if the sign is not highlighted, the student always adds. Yet, even with this modification, the student cannot add three-digit numbers. This information can help the educator decide what information and skills the student has, what supports help him or her show those skills, and where to focus instruction.

A potential limitation to direct performance assessment is the lack of national or regional norms against which to compare each student. However, comparison with other work by the student or comparison with classmates is appropriate.

For example, a teacher could construct local (for example, classroom) norms about homework completion and then compare an individual student's rate of homework completion with the rate of classmates to assist in setting expectations and goals with the student.

Instructional Environment Assessment

A fourth broad category of assessment is assessment of the student's instructional environment. This type of assessment focuses on the interaction between the child and instruction and the child and the environment.

The assumption underlying this category of assessment is that there may be components of the instructional environment that the educator can alter to facilitate better student performance. This focus of assessment highlights the important influence of instructional and environmental factors on student achievement and behavior.

For example, James Ysseldyke and Sandra Christenson (1993) have developed The Instructional Environment System—II (TIES-II) to assist educators in examining the fit between a student and the instructional environment. TIES-II identifies 12 environmental and instructional components that are linked to student performance.

These components are instructional match, teacher expectations, classroom environment, instructional presentation, cognitive emphasis, motivational strategies, relevant practice, informed feedback, academic engaged time, adaptive instruction, progress evaluation, and student understanding. By examining these component areas, educators can better identify the characteristics of instruction or the classroom that could be altered to help the student.

Figure 11 presents specific considerations for using these four approaches to assess students with traumatic brain injuries.

Adapting Standardized Measures During Assessment

Standardized, norm-referenced assessment measures may provide some important information needed during assessment of a student with a traumatic brain injury. However, a standardized administration likely will not tell the evaluator *why* the student has failed. At the same time, the structure provided by these measures may actually help the student compensate for difficulties that will become apparent in the classroom.

Testing-of-limits procedures (Sattler, 1988) may help educators examine why a student experiences failure and what supports are helpful. If an educator plans to use and report norm-referenced results, he or she must follow standardization procedures carefully during test administration. Following standardized administration, however, the educator may make modifications to test the limits of the student's performance to help determine why the student failed an item and what supports are helpful to the student.

Some professionals (for example, Lezak, 1983) even suggest using a double scoring system in which an educator records the student's score on the standardized administration of a measure and also the student's score on an adapted administration. If an educator chooses to test the limits during assessment and use a double scoring system, the educator must report exactly the adaptations made during the assessment process. If adaptations significantly change the nature of the task, the use of test norms is inappropriate.

Following standardized administration, the educator might test the limits of the student's performance by

- re-administering timed items without time limits,
- repeating instructions,
- administering items below basal levels and above ceiling levels,
- presenting problems or items individually,
- changing item modality (for example, oral to written),
- pacing the student through multi-stepped items,
- highlighting salient information,
- using trial teaching on items,
- providing increased reinforcement, or
- asking the student to describe his or her problem-solving strategies.

These types of adaptations may help the educator identify obstacles to optimal performance and strategies that minimize the obstacles.

Interpreting Results

Educators must interpret assessment results cautiously, keeping in mind the ways in which students with traumatic brain injuries may differ from typically developing students. When interpreting assessment results obtained for students with traumatic brain injuries, educators should remember the following facts:

- The skills of students with traumatic brain injury may change rapidly, particularly in the first years after injury. Assessment results may represent functioning today, but not tomorrow.
- Students with traumatic brain injuries often exhibit significant academic scatter in abilities.

Figure 11

Tools and Considerations for Assessing Students with Traumatic Brain Injuries

Type of Tool	Considerations
Norm-referenced Cognitive Measures	
• Wechsler Intelligence Scale for Children (Third Edition) • Wechsler Preschool and Primary Scale of Intelligence (Revised) • Wechsler Adult Intelligence Scale (Revised) • Stanford-Binet Intelligence Scale (Fourth Edition) • Bayley Scales of Infant Development (Second Edition) • Differential Ability Scales • Woodcock-Johnson Psychoeducational Test Battery (Revised) • Kaufman Assessment Battery for Children • Detroit Tests of Learning Aptitude (Third Edition) • Wide Range Assessment of Memory and Learning • California Verbal Learning Test (Children's Version) • Wechsler Memory Scale (Revised) • Test of Memory and Learning	• May be good measures of preserved abilities (for example, Wechsler Vocabulary and Information subtests) • Often don't measure the ability to learn new information and skills • Cannot predict domain knowledge from small sample of items • May have limited predictive validity due to recovery of functions or emerging disabilities • May have limited reliability due to student variability in state (for example, arousal and attention) • Measures performance in controlled environment with few distractions • May not represent functioning in classroom • Summary scores may be misleading (for example, a student with average IQ may have significant difficulty in the classroom) • Summary scores may mask uneven skill profile • Certain subtests may be good measures of specific skills • May be useful for monitoring recovery • Quantitative results do not link directly to classroom interventions • Observations and testing of limits can be used to generate hypotheses about interventions • Memory measures may evaluate only immediate recall

Type of Tool	Considerations
Norm-Referenced Academic Measures	
• Wechsler Individual Achievement Test • Woodcock-Johnson Psychoeducational Test Battery (Revised) • Peabody Individual Achievement Test (Revised) • Peabody Picture Vocabulary Test (Revised) • Wide Range Achievement Test (Third Edition) • Kaufman Tests of Educational Achievement • Diagnostic Achievement Battery (Second Edition) • Key Math (Revised) • Test of Mathematical Abilities (Second Edition) • Test of Early Mathematical Abilities (Second Edition) • Test of Reading Comprehension (Third Edition) • Test of Early Reading Ability (Second Edition) • Woodcock Reading Mastery Tests (Revised) • Test of Reading Comprehension (Third Edition) • Test of Written Language (Second Edition) • Test of Written Spelling (Third Edition)	• May be good measures of preserved skills • May not measure ability to learn new information and skills • May not reveal extent of student's "scatter" in abilities • May be misleading; may showcase higher level preserved abilities without exposing weakness in foundation skills • Standardized administration may provide limited insight into why student fails • May represent achievement only under quiet, paced conditions • May provide information about student's speed of performing tasks • May have limited predictive validity due to unpredictability of recovery • May have limited ecological validity; may not represent classroom performance • Observations and testing of limits may be used in developing hypotheses about skills and interventions • Some reading measures may not measure comprehension • Some math measures may not measure reasoning and problem solving • Student failures may result from difficulty with presentation or format, not content • Use of multiple measures with varied content and formats allows broader examination of skills

Type of Tool	Considerations
Direct Performance Measures • Class work samples • Curriculum-based assessment • Homework • Classroom tests • Attention to classroom tasks • Memory for classroom routines, instructions, assignments • Large-group classroom participation • Small-group classroom participation • Peer interaction	• Ecologically valid; represent "real-life" classroom performance • Highlight wide range of strengths and needs (higher- and lower-level skills) • Can be used to systematically inventory specific sets of skills • Can be constructed to assess new learning • Can be used to raise hypotheses about interventions • Can be manipulated to test hypotheses about interventions • Provide a direct link to intervention • Can be compared to local (for example, classroom) norms • National or regional norms not generally available • Can be used to monitor student progress • Can be used to monitor efficacy of intervention • May be compared with pre-injury performance • May be used as teaching tools with the student
Instructional Environment Assessment • The Instructional Environment System—II (TIES-II) • Classroom observation • Direct measures of instructional components (for example, engaged time, feedback, review)	• Facilitate evaluation of instructional variables affecting performance • Facilitate evaluation of environmental variables affecting performance • Assist in developing hypotheses about factors influencing performance • Assist in identifying intervention strategies • Facilitate evaluation of intervention

The presence of higher-level abilities does not guarantee the presence of lower-level abilities.

- Performance in a controlled, quiet atmosphere may differ significantly from functioning in a typical classroom.
- Some tests may not tap higher-level problem-solving skills and executive functions that are essential in real-world environments.
- Frequent re-administration of some tests may result in "practice effects" or improved student performance due to practice.

Reporting Results

Most educators are comfortable reporting assessment results orally and in writing. Educators may present results obtained from assessments of students with traumatic brain injuries through report formats similar to those used with other students. Educators may use report sub-headings including reason for referral, background information, assessment tools, assessment results, educational implications, intervention strategies, summary, and recommendations. When reporting assessments of students with traumatic brain injuries, educators should

- include descriptions of any alterations in test format or presentation during the assessment process;
- interpret assessment findings for the reader, particularly if traditional interpretations of findings may be invalid and/or misleading;
- describe behaviors observed during assessments and their implications for classroom interventions; and
- provide educational programming recommendations that follow from assessment findings and are applicable to classroom settings.

Re-evaluation

Because students with traumatic brain injuries often demonstrate rapid recovery of skills and changes in learning and emotional profiles, the educator may need to re-evaluate these students' skills more frequently than mandated by federal and state laws.

Educators can use formal and informal appraisal of the student's strengths and needs for re-evaluation purposes. Daily review of progress assists educational team members in providing the student the appropriate level of instruction and support. More formal evaluation of progress (for example, through administration of standardized measures or through examination of classroom progress over time), helps participants target short- and long-term goals for the student's individualized education program.

Evaluations at regular and frequent intervals, approximately every three to six months in the first year following a student's injury (Begali, 1992) may help professionals developing the students individualized education program.

References

Anastasi, A. *Psychological Testing.* New York: Macmillan Publishing Company, 1988.

Begali, Vivian. *Head Injury in Children and Adolescents.* 2nd ed. Brandon, VT: Clinical Psychology Publishing Co., 1992.

Guare, R. *Head Injury Rehabilitation: Managing Attention Deficits.* Houston: HDI Publishers, 1988.

Lezak, M.D. *Neuropsychological Assessment.* 2nd ed. New York: Oxford University Press, 1983.

Prigatano, G.P., M. Pepping, and P. Klonoff. "Cognitive, Personality, and Pychosocial Factors in the Neuropsychological Assessment of Brain-injured Patients." In *Clinical Neuropsychology of Intervention.* Eds. B. Uzzell and Y. Gross. Boston: Martinus Mijnoff, 1986.

Sattler, J. *Assessment of Children.* 3rd ed. San Diego: Jerome M. Sattler, 1988.

Ylvisaker, M. *Head Injury Rehabilitation: Head Injury Rehabilitation with Children and Adolescents.* Houston: HDI Publishers, 1988.

Ylvisaker, M. "Cognitive and Psychosocial Outcome Following Head Injury in Children." In *Mild to Moderate Head Injury.* Eds. J.T. Hoff, E.I. Anderson, and T.M. Cole. London: Blackwell Scientific, 1989.

Ylvisaker, M., et al. "Cognitive Assessment." In *Educational Dimensions of Acquired Brain Injury.* Eds. R.C. Savage and G.F. Wolcott. Austin, TX: Pro-ed, 1994.

Ysseldyke, James, and Sandra Christenson. *The Instructional Environment System—II: A System to Identify a Student's Instructional Needs.* Longmont, CO: Sopris West, 1993.

BEST COPY AVAILABLE

Individualizing an Education Program

6

Educators face many challenges when providing services for a student with traumatic brain injury. Both novice and veteran educators need to realize that addressing the educational needs of a student a with traumatic brain injury is not business as usual. The student may present behavioral and academic challenges that stretch the experience and expertise of school staff members providing the child's educational program.

These challenges require school staff members to collaborate as they design, implement, and evaluate effective program delivery. Collectively, school staff members bring the expertise, resources, and support necessary to meet the student's physical, cognitive, social, and psychosocial needs geared toward lifetime success.

While all school personnel involved in developing a student's educational program may not have a daily role in program delivery, each plays a critical role in designing and evaluating program modifications and educational strategies to meet the student's needs. Students with traumatic brain injuries can demonstrate dramatic progress in all academic and nonacademic areas with appropriate programming and the necessary support. Although the case manager for each student with a traumatic brain injury coordinates the student's program, all school staff members who have contact with the student must be familiar with the student's specific needs.

Physical Abilities

Students with traumatic brain injuries frequently experience both cognitive and behavioral deficits that affect their school performance. They may have other physical or neurological challenges also, including deficits in speech, hearing, vision, smell, and taste; seizures, headaches, or other pain and discomfort; deficits in balance, coordination, and fine and gross motor skills; mobility difficulties; and fatigue. These situations may present school staff members with unique challenges in meeting the student's academic needs as well as therapy, medical, or other personal care needs (see Figure 12).

While homebound instruction is an option for a student after discharge from a hospital or rehabilitation facility, a transition back to a familiar school and friends may greatly enhance the student's recovery. First, however, a flexible range of services must be in place to ensure the student's successful return to school.

Stamina

An appropriate schedule is one of the most critical aspects of a successful educational program for a student with a traumatic brain injury. Initially, school staff members may give priority to meeting the student's physical needs.

Reduced stamina may last a year or longer after a traumatic brain injury, and this may require specific accommodations. A student may manifest fatigue in limited endurance and reduced spans of attention and concentration. Medications for seizures, pain, or other conditions may contribute also to drowsiness and fatigue.

A student with a traumatic brain injury may require a shortened school day or modified schedule. The student's individualized education program should specify an altered schedule to be

Figure 12

Physical Accommodations

Challenges	Strategies
Student's fatigue causes • Inattention • Behavior problems • Inappropriate sleeping • Unsafe mobility • Physical weakness	**Adjust schedule to include** • rest periods • fewer transitions • late arrival • early dismissal • part-time homebound instruction **Modify classroom instruction by** • Reducing the physical components of the tasks • Reducing the time spent on individual tasks • Ensuring comfortable positioning • Assigning a student or adult to assist with physical tasks • Assigning a student or adult to assist during transitions **Instruct the student to** • Sit for a resting period • Lay down for a specified time • Have a beverage or snack • Go for a walk or exercise **Check with home about** • adequate sleep at night • medications

re-evaluated frequently with a goal of returning to a full-day schedule.

Also, school personnel may need to schedule highest priority activities at a time when the student is most alert and receptive to instruction. For example, if a student is most alert and receptive to new experiences during the morning, teachers may need to introduce new content during that time.

Some students with traumatic brain injuries may require a rest or snack period, while others may need to be excused from classes with a physical component, such as physical education. When appropriate, the student may receive speech and language therapy, occupational therapy, and physical therapy within the classroom. This allows school personnel to integrate these programs and services into educational activities.

A student with a traumatic brain injury may require accommodations that range from allowing additional time to complete tasks to providing adult, one-to-one assistance with assigned tasks. Spontaneous recovery and the benefits of therapy and educational programming may reduce the need for these accommodations over time.

While the assignment of an adult to assist a student one-to-one with physical, health, and safety needs may seem like an appropriate solution to meeting the student's needs, it may perpetuate dependence and present barriers to meeting the student's long-range goals. School staff members involved with the student's individualized education program should carefully consider and regularly evaluate the level of assistance provided, especially from adults.

It is critical that school staff members identify those areas with which the student requires full assistance, teaching or retraining, or some type of cuing or prompting. Because a student's level of performance may change rapidly, his or her individualized education program may require frequent revision to reflect actual performance and appropriate goals.

A student with a traumatic brain injury may face numerous physical challenges that may interfere with functional participation in the educational program. The student may be unable to speak clearly, manipulate materials, produce written work, or move around the school safely or independently. Again, this reinforces the need for teachers, therapists, and other school personnel to work collaboratively.

Mobility

If a student with a traumatic brain injury has difficulty moving safely in the school environment, he or she may require assistance during transitions throughout the school day. In some cases, the student may need to leave classes a few minutes early to avoid congestion in the hallways or on stairs. He or she may need someone to help carry belongings and monitor his or her safety.

District policies may require that an adult provide this assistance. School personnel may consider giving a classmate this role to encourage social relationships with peers if the situation is safe. This may occur with or without an adult shadowing the student helper. For more information on mobility difficulties, see the physical therapy section in Chapter 8.

Manipulation of Materials

A student with a traumatic brain injury may have difficulty with fine motor skills and organizing supplies. Getting materials ready or manipulating materials for hands-on activities, such as science or art classes, may be difficult or impossible for a student with a traumatic brain injury.

Technology can be used to simulate or supplement some physical activities. For example, a software program could simulate a dissection, a projection microscope could project a "wet mount" slide, or a switch could be used to operate a blender or other small appliance. Educators must consider the critical elements of the activity that need to be altered so the student with a traumatic brain injury can participate in and benefit from the activity.

Classroom environments and activities that allow for peer assistance or peer partners afford the greatest opportunities for participation while encouraging socially appropriate relationships. However, behavioral issues may require that an adult be available to monitor behaviors. For more information, see the occupational therapy section in Chapter 8.

Vision

Visual changes in a student with a traumatic brain injury may affect mobility, visual interactions with written materials, and other graphic representations. In addition, students may have stereoscopic vision or changes in visual acuity or field of vision. These, coupled with other damage to visual pathways and surrounding brain tissue, can also lead to changes in how a person sees and understands his or her environment. Among other things, students with traumatic brain injuries may have difficulty seeing detail and color, distinguishing spatial orientation (with regard to themselves and objects around them), perceiving depth, as well as determining figure and ground.

Translated to the classroom situation, the student may require visual retraining and modified materials. Modifications could include large or emphasized print, double spacing between lines, reduction of the amount of material per page or per period of time, provision of contrast, and simplification of the material to be viewed.

In addition, brain injury can result in double vision (diplopia) or decreased visual acuity. The decrease should be determined by an eye-care physician. If the decrease is severe, a teacher of the visually impaired or a low-vision specialist should assess the student's functional near and distant vision. Also, occipital lobe injuries may cause cortical visual impairments which means that the brain does not perceive the visual information and thus the child is functionally visually impaired. This often resolves gradually over time, but can be permanent. Figure 13 provides various modifications and strategies for use with students with vision difficulties.

Hearing

Some students with traumatic brain injury experience hearing loss. Loss of hearing, even if partial, creates a sense of isolation. The inability to readily understand the voices of family members, friends, music—even the sound of a pet—is quite devastating.

Effective communication is critical to learning and a sense of well-being. A student with an acquired (post lingual) hearing loss usually re-

Figure 13

Vision Accommodations

Challenges

Students is unable to

- read text
- see chalkboard
- prepare written assignments

Strategies

Modify classroom instruction by
- Reading materials aloud for board work
- Providing high contrast when presenting lessons
- Seating student in optimum areas
- Avoiding objects or pictures that are "crowded"
- Using concrete objects whenever feasible
- Emphasize concrete and functional skills for understanding
- Recording materials

See that materials include
- colored objects or materials
- reading materials in a large font size
- a black felt pen for marking or writing
- dark-lined paper
- yellow acetate to use over print to improve contrast
- a reading stand
- a desk lamp for illumination

Instruct the student to
- Learn the basic skills of orientation and mobility
- Move freely within a structured classroom

Other
- Allow student extra time to complete assignments

tains the ability to speak clearly. However, the student may need speech therapy for a period of time due to the inability to auditorily check speech accuracy.

Frequently, people assume inaccurately that a student with good speech and lipreading skills actually hears clearly or is able to process all that he or she hears. What is generally not understood is that much guess work is involved in filling in the blanks of what is not heard. Older students with greater life experience will be better at guessing due to their use of interactive language. Extra care is needed to ensure that students are given clear visual and auditory messages, with careful checks for comprehension throughout the day.

When a student has a sudden hearing loss and continues to speak clearly, it is important to assess whether the student is picking up on all the verbal communication in the classroom. Generally, those with hearing loss are quiet students. Frustration is demonstrated either in acting out or in withdrawing from others.

Never assume a student with a sudden hearing loss will be able to lipread what they do not hear. Lipreading is a skill and everyone has differing talents. Some students lipread very well, while others will not be able to lipread much at all. Lipreading is not a measure of intelligence or diligence. Regard this skill as you regard the skill of singing. Some are born with great talent and others will never carry a tune no matter how much they practice.

A hearing loss is rarely completely correctable with the use of hearing aids or other auditory

Figure 14

Hearing Accommodations

Challenges

Student

- has a hearing loss
- reads lips
- wears hearing aid

Strategies

Modify classroom instruction by
- Decreasing background noise
- Having class sit in a circle or semi-circle for class discussion
- Facing the class during lectures
- Writing notes on the board
- Pointing to the student before expecting a verbal response

See that materials include
- a written copy of class notes
- videos that are captioned

Instruct the student to
- Raise hand before speaking
- Repeat back verbal messages to assure accuracy

assistive listening devices. However, these devices may help the student in locating sound and in understanding the spoken word in certain circumstances. The school audiologist can help to assess the best assistive listening device for each student.

Hearing aids do not cure the inability to hear, nor do they correct hearing as glasses correct vision. Although hearing aids benefit many students, those with severe to profound hearing loss may find no benefit at all. For some students, hearing aids are disturbing and distracting, potentially causing headaches.

Some students might benefit from an "FM unit" that overcomes background noise and poor acoustics. The "sender" wears the microphone part of this wireless device, the "receiver" the part that maximizes hearing. Therefore, classroom discussions require passing the microphone from speaker to speaker. As with most "assistive learning devices," FM units must be "fit" by appropriately trained and licensed personnel.

Some students may require an interpreter. Students who lose their hearing at a later age may prefer to use an interpreter who supports their lipreading needs. Others may benefit from learning sign language. Check with the student for the communication means that most appropriately meets his or her needs.

Figure 14 provides various modifications and strategies for use with students with hearing difficulties.

Cognitive Abilities

Cognitive deficits are common in students who have sustained moderate to severe brain injuries. The severity varies greatly and often is manifested by deficits in short- and long-term memory, attention, organizational abilities, orientation, perception, and problem solving.

These deficits may continue to interfere with the student's learning success even if the student has regained many previously acquired academic skills (for example, reading, writing, and calculation skills). Therefore, it is important to note that a student's return to pre-injury achievement levels does not necessarily mean continued achievement at pre-injury rates. A student with a traumatic brain injury may remember the level and rate of learning prior to injury and may become

Memory Accommodations

Challenges

Student

- experiences difficulty recalling directions for classroom activities or assignments

- experiences difficulty recalling new information from reading or oral presentations

- forgets to complete or turn in assignments

- loses or forgets to bring personal belongings, books, assignments, or other materials.

- forgets what he or she was going to say.

- forgets where he or she is or how to find way to particular part of school building.

Strategies

Modify classroom instruction by
- Providing new information based upon existing knowledge base
- Providing concrete examples such as solved math problems
- Providing orientation and organization time at the beginning and end of the school day
- Previewing the day's schedule
- Reviewing the day's assignments
- Providing less complex directions with fewer steps
- Having a student repeat or restate directions
- Teaching to the student's learning mode, such as visual matching
- Communicating with parents regularly regarding progress
- Providing a peer partner
- Teaching the student how to use an assignment book
- Teaching the student "cuing systems" to find out what to do next

See that materials include
- duplicate textbooks to keep at home
- an agenda or schedule
- a written copy of class notes
- written directions or checklists with highlighting
- a map or flowchart of sequences

Instruct the student to
- Carry a backpack or bookbag
- Use an assignment book, calendar book, or electronic calendar
- Ask the teacher to verify the assignment book for accuracy
- Label materials
- Rehearse new learning
- Use mnemonic devices
- Use word association strategies
- Give definitions or descriptions for words the student can't retrieve
- Use an alarm watch or timer to remember critical times throughout the day
- Record reminders on portable tape recorder

frustrated or puzzled by an inability to reach those levels or maintain his or her previous pace.

A brain injury can have a major negative impact on new learning. Thus, it is critical that programming for students with brain injuries emphasizes process over content.

Memory and Attention

The interaction of memory and attention plays a large role in new learning. Typically, both are impaired in the student with a traumatic brain injury. These students frequently require extensive use of environmental cues in the process of encoding, storing, and recalling information.

As the student progresses in the recovery process and gains awareness of his or her learning style, self-generated strategies should replace technical aids, adult prompts, and other external cues. Developing strategies to compensate for attention and memory deficits is critical in developing the capacity for lifelong functional learning. In many cases, electronic calendars and other technology can help the student become more independent (see Figures 15 and 16).

Organization and Orientation

Organization and orientation may cause problems for a student with a traumatic brain injury. The student may require intensive orientation to time and physical environment. The student may experience difficulties in physically organizing materials, such as the contents of a backpack, desk, or locker.

Figure 16

Attention Accommodations

Challenges	Strategies
Student	**Modify classroom instruction by**
• is easily distracted • demonstrates difficulty focusing or sustaining attention • perseverates on specific topics, discussions, or activities. • becomes frustrated with activities that require sustained attention • rocks, repositions self frequently, or fidgets	• Optimizing seating placement (e.g. near the front, away from windows and doorways) • Providing a quiet environment • Acknowledging attention deficits as a component of the student's learning style • Providing external cuing to maintain attention • Providing instruction in short (five- to 15-minute) activity blocks • Rewarding "on task" behaviors • Providing for individual or small-group instruction • Previewing activity's purpose and anticipated timeline
	See that materials include • a self-paced video or computer instruction to supplement classroom instruction
	Instruct student to • Watch the instructor • Sit where least distracted • Pay attention to established cues • Work at a study carel or other low-distraction area • Have a rubber ball or something to squeeze to release stress • Communicate to teacher when feeling extremely distractable

The student with a traumatic brain injury also may experience difficulties organizing thoughts or new concepts and planning actions. This may cause difficulty in understanding relationships such as cause and effect, similarities and differences, and actions and consequences. The student also may have difficulty categorizing objects into groups, parts into a whole, or sequencing events.

Instructional designs need to structure the environment and teaching process to maximize the student's learning potential. At the same time, teachers need to work toward developing the student's cognitive skills by teaching the learning process, which includes compensatory strategies, as well as the academic or functional content. Students with these acquired learning deficits need to "learn how to learn" (Cohen, et al., 1985; Henry, 1983; NHIF, 1985).

Compensatory strategies may include daily assistance with orientation and organization or the use of a tape recorder, computer, schedule or calendar reminders, or other aids. Strategies may include overt behaviors, such as asking the teacher for class notes or requesting tutorial assistance when needed. It also may include internal procedures, such as developing mnemonic devices or repeating new information. Figure 17 provides additional modifications and strategies to use with students with organization difficulties.

Problem Solving

Students with traumatic brain injuries frequently have difficulty with both real and hypothetical problem-solving activities. It may be difficult for them to generalize skills to different environments or to "see the big picture" and grasp the nature of a problem. Students with traumatic brain injuries also may find it difficult to sequence the steps toward possible solutions, even though they may possess the component skills to solve the problem.

For example, a student may have the basic skills needed to read a math story problem and the

Figure 17

Organization Accommodations

Challenges

Student's difficulty with executive functions results in

- Loss of personal belongings, assignments, books, and other materials
- Forgetting necessary materials and assignments
- A cluttered or disorganized locker, desk, and work area
- Late, missing, or incomplete assignments

Strategies

Modify classroom instruction by
- Providing orientation and organization time at the beginning and end of the school day
- Previewing the day's schedule
- Reviewing the day's assignments
- Communicating regularly with parents regarding assignments and due dates
- Providing a peer partner in each class to assist with organizational tasks
- Establishing routines that provide a predictable environment

See that materials include
- duplicate textbooks to keep at home
- a written copy of class notes
- written directions or highlighted checklists
- a map or flowchart of sequences

Instruct student to
- Carry a backpack or bookbag
- Use an assignment sheet or assignment book
- Label materials
- Use mnemonic devices
- Use notes as reminders

basic computational skills to compute it, but nevertheless, the student is unable to solve it. The student may need concrete examples of similarly solved problems to refer to as a model or a checklist of problem-solving steps.

The same may hold true for problem solving in social situations. The student may have demonstrated the component social skills but be unable to put them together to solve a problem in a real-life social situation. In this instance, it may be necessary to provide appropriate peer role models and direct instruction in problem solving and social pragmatics. Figure 18 provides additional modifications and strategies for use with students with problem-solving difficulties.

Academic Activities

Reading

The skills needed to read successfully may be difficult or impossible for some students with traumatic brain injuries. Students may be limited in their ability to physically hold a book or turn pages, or they may be unable to discriminate or visually track while reading pages of text.

Many alternatives to independent reading are available (see Figure 19). Students may use enlarged print materials, a computer monitor, or a variety of print magnification devices. If the volume or layout of the material is confusing to the student, a limited amount of information can be presented on each page.

Teachers who prepare their materials on a word processor can enlarge text, use a screen reading program (which reads the entire computer screen, including icons and prompts), or use a "talking" word processing program (which reads the text of the document). Some students may benefit from materials that someone has rewritten into an abbreviated or less complex form.

If the student is, by state definition, visually impaired in the better eye after correction, he or she may be eligible for outreach services from the Education Services Center for the Visually Impaired. These services include evaluation, technical assistance, materials, and equipment designed for students with visual impairments. Contact the Outreach Program at 1700 West State Street, Janesville, Wisconsin 53546 or 1-800-832-9784. Services include large-print books, Braille texts, recorders, bold-lined paper, and voice output devices.

Writing

Writing activities may be difficult or impossible for some students with traumatic brain injuries. Students may be limited in their ability to produce written work with a pencil, pen, or computer. Some options include reducing the expectations for written work to a level the student can accomplish, providing the student with a note-taker for classroom notes and dictation, and providing the student with peer or teacher notes. Or the school may allow the student to tape-record answers or assignments instead of preparing a written response or report.

Other options include assistive technologies, including classroom recordings (audio or video); a portable typewriter; a computer with or without hardware modifications (such as a keyguard or alternate keyboard); or software modifications (such as word prediction software to reduce the number of keystrokes required and to aid spelling and word finding). Figure 20 lists additional modifications and strategies to use with students with writing difficulties.

Nonacademic Activities

Providing physical education and playground activities for students with traumatic brain injuries presents school personnel with a dilemma that requires careful consideration of each student's physical capabilities. For some children with traumatic brain injuries, contact sports and some physical education and playground activities (such as dodgeball and baseball and climbing) may pose the risk of another brain injury. School personnel need clear medical direction regarding the student's participation in physical education, sports, playground, and other recreational activities. A physician's order is required to excuse a student from physical education.

For other students with traumatic brain injuries, physical education may help counter some of the adverse consequences of a traumatic brain injury by increasing endurance, strength, speed, and agility. Also, physical education offers time for peer interaction, socialization, and improved self-concept, all of which may benefit the child with a traumatic brain injury.

The school occupational therapist and school physical therapist may assist in assessing the student's capabilities and any need for modifications or assistance.

Problem-solving Accommodations

Challenges

Student's difficulty completing math assignments results in

- A high level of frustration with math
- Refusal to do math

Strategies

Modify classroom instruction by
- Breaking down problems into steps
- Listing the sequence to follow
- Providing a sample solved problem
- Providing a peer coach
- Providing "smart charts" or other mnemonics
- Providing a "talking calculator"
- Providing a computer with voice input
- Providing a "tape loop" listing steps to be completed
- Reducing the length of assignments
- Providing preprinted materials
- Allowing more time to complete assignments
- Increasing the success rate for the student
- Providing math problems relevant to day to day experiences
- Providing opportunities for peer problem solving
- Contracting with the student on the amount of time to be spent on math and the number of problems to be solved
- Negotiating a reinforcement system and schedule with the student
- Allowing the student to correct his own work with a calculator

See that materials include
- graph paper to write on
- writing paper with raised lines
- fewer problems per page
- enlarged print as needed
- more space to work out problems
- problems on computer as needed
- "like" problems on a page
- easier materials as needed
- manipulative materials for calculations
- a calculator no more complex than needed to solve the task at hand
- information presented as graphs or in columns

Instruct student to
- Ask for help
- Use a calculator and a "talking" calculator
- Take a break

Reading Accommodations

Challenges

Student's difficulty with the physical mechanics or comprehension of reading results in

- Limited letter or word recognition
- Reduced comprehension
- A high level of frustration with reading
- Inability to read
- Refusal to read

Strategies

Modify classroom instruction by
- Seating student optimally in classroom to see chalkboard, overheads, and such, while avoiding glare and extreme shadow
- Reading materials aloud
- Posting schedules, assignments, and such
- Using a "talking word master" to pronounce difficult words
- Reading materials by sections, with pauses and "recapitulation"
- Scanning or typing materials into computer using "talking" word processor
- Color coding questions and the materials related to them

See that materials include
- a bookstand or electronic page turner
- reading materials in larger font size
- less print with fewer items or problems on each page
- color coding or highlighting of every other line
- contrast between background and print colors (such as navy blue print on yellow background)
- books recorded on tape or compact disk

Instruct student to
- Follow words with finger, ruler, or other marker
- Read aloud
- Ask a friend to read aloud
- Listen to book recordings on tape
- Use a "talking word processor" to hear assigned readings, questions, or directions read aloud
- Read one section at a time or recapitulate information

Check with the student's home about
- the student being monitored by an opthamologist for maximum optical correction and assessment of a visual field impairment

Writing Accommodations

Challenges

Student's difficulty with the physical mechanics of writing result in

- Poor or illegible handwriting
- Very labored or slow handwriting
- Use of the nondominant hand for writing
- A high frustration with writing
- Inability to write
- Refusal to write

Strategies

Modify classroom instruction by
- Lowering expectations for the *quality* of written work
- Lowering the expectations for the *volume* of written work
- Allowing additional time for work completion
- Allowing use of a tape-recorder to complete "written" assignments

See that materials include
- a Yes/No format
- a multiple choice format
- a short answer format
- fewer questions per page
- a large writing area
- lined paper or paper with darker or raised lines
- graph paper for lining up math computation problems
- dicem or other nonslip material under paper or clipboard
- a specialized pen, pencil, chalk, marker, etc.
- a specialized hand splint
- notes with activity-specific vocabulary
- worksheet that can be typed or scanned into a word processor or computer

Instruct student to
- Hold down paper or clipboard with nonwriting hand or other adapted device
- Tape record answers
- Use a portable typewriter
- Use a regular computer with a key guard
- Use a computer with an alternate keyboard
- Use a computer or word processor with spell checker and macros
- Use a "word prediction" or other specialized software
- Use a computer with voice recognition system
- Use a computer with switches

Obtaining or maintaining a driver's license is extremely important to most teenagers. Students who have sustained a traumatic brain injury may be required to re-apply for a driver's license.

The ability to drive has long-term ramifications for vocational options, the level of independence, and social opportunities. Therefore, some students with traumatic brain injuries may make driving a priority. While most high schools offer driver education as part of their course offerings, they may not have the flexibility to meet the adaptive driving instruction needs of some students with traumatic brain injuries.

Unlike many academic and elective offerings, there are unique state-imposed standards for driver education and for obtaining a driver license. Driver education classes have requirements for minimum attendance and passing grades. While a student need not take a driver education class to obtain a license, the student may want to for educational, safety, and financial reasons. By receiving driver's instructions with peers, students learn about issues such as using seat belts, avoiding alcohol and other drugs, and liability. Driver education classes also address driving courtesy, safety, and best driving practices, and provide for training on driving simulators and limited "behind the wheel instruction." Also, many insurance companies offer discounts for successful completion of driver education classes.

Because physical, perceptual, behavioral, and judgmental deficits put students with traumatic brain injuries at risk for re-injury, driving is a special concern. Collaborating with health-care providers on the medical limitations of drivers is important. The state Department of Transportation is responsible for licensure, but the school district may be responsible, at least in part, for preparation for driving.

Adapted materials, supplemental academic instruction, modifications such as hand controls for simulators and vehicles, and increased amount of simulator and behind-the-wheel instruction may be necessary if driver's education is part of the student's individualized education program. School personnel should contact the Department of Transportation regarding training or driving restrictions.

References

Cohen, S.B., et al. "Educational Programming for Head Injured Students." In *Head Injury Rehabilitation: Children and Adolescents*. Ed. M. Ylvisaker. San Diego, CA: College-Hill Press, 1985, pp. 347-360.

Henry, K. "Cognitive Rehabilitation and the Head-injured Child." *Journal of Children in Contemporary Society* 16 (1983), pp. 189-205.

National Head Injury Foundation. *An Educator's Manual: What Educators Need to Know About Students With Traumatic Brain Injury*. Framingham, MA: NHIF, 1985.

Ylvisaker, M. "Language and Communication Disorders Following Pediatric Head Injury." *Journal of Head Trauma Rehabilitation* 1 (1986), pp. 48-56.

Managing Behavior 7

Social, emotional, and behavioral problems often present the most significant and enduring obstacles for the student with a traumatic brain injury. Following injury, the student may experience short- or long-term difficulties with behaviors that may affect the student's academic performance, interpersonal relationships with teachers and peers, and ability to function independently.

Many factors may combine to influence behavior following brain injury, precipitating behavior patterns that, in some cases, may be functional for the student but inappropriate for the setting. Because the brain injury likely has disrupted typical brain-behavior relationships such as the ability to control emotions or to remember previous events, the student may have reduced control over his or her behavior and may not respond positively to traditional behavior management strategies. Some management approaches may even exacerbate the challenging behaviors of students with traumatic brain injuries, making those behaviors more difficult to change.

Although no one typical profile of behavior fits every student following traumatic brain injury, the following four general patterns of behavior following injury may be seen (Lehr, 1990):

- The student may exhibit little change in behavior. The student's behavior may be similar to his or her behavior before injury.
- The student may experience exacerbation of challenging pre-injury behavior. The student whose behavior was problematic prior to injury may become more challenging as a result of the brain injury. Also, strategies that were effective in managing behaviors prior to injury may no longer be appropriate after injury.
- The student may display marked changes in behavior. The student who exhibited few if any behavioral difficulties prior to injury may display significant problems following injury. Challenging behaviors may emerge immediately following injury or may gradually increase during recovery. Family members, friends, and teachers may feel unequipped to handle these new challenges.
- The student may display changes in behavior that are related to other consequences of the brain injury deficits. Challenging behaviors following brain injury can arise in response to the student's awareness of limitations, such as cognitive or sensory deficits. This awareness, when combined with other deficits (such as limited emotional control) can produce behavior problems.

Some specific behaviors frequently interfere with a student's classwork following a traumatic brain injury. Students with such injuries may have cognitive limitations that lead to poor planning, poor decision making, poor judgment, memory disturbance, perceptual distortions, and inattention. Following injury, students may experience intense emotional responses that influence behavior, including anxiety, sadness, depression, or anger. These intense emotions may lead to acting-out behaviors or withdrawal. Students also have reported that they feel as if they are "going crazy" following a traumatic brain injury.

Specific behaviors include:

- **Lack of attention.** Following a traumatic brain injury, attention can be severely disrupted. Students may have difficulty being alert, sustaining attention, giving selective attention, or shifting attention.

- **Disinhibition.** Disruption in the ability to inhibit behavior is common following a traumatic brain injury. Students with such injuries may experience a loosening of emotional or behavioral controls, which leads to inappropriate social behavior such as inappropriate language, overt sexual behavior, aggression, and distractibility.
- **Aggression.** Following injury, aggression may result from disinhibition, an emotional response to deficits, or from damage to certain areas of the brain.
- **Emotional lability.** Students with traumatic brain injuries often have difficulty controlling their emotions. They might cry easily or laugh inappropriately.
- **Confrontational behavior.** Students with traumatic brain injuries may challenge or confront others. They may have limited understanding of the intentions or roles of other people.
- **Impulsivity.** After injury, students may be impulsive; they may not pause to think before acting.
- **Egocentricity.** The ability to take the perspective of others may be reduced following a traumatic brain injury. Students may be aware of their own needs, but not the needs of others.
- **Withdrawal.** Some students withdraw emotionally following traumatic brain injuries. This can be due to arousal difficulties or to sadness or depression.

A person's change in behavior following a traumatic brain injury is often misunderstood. Figure 21 addresses four of the most common misconceptions.

Understanding Underlying Factors

In general, students with severe brain injuries are more likely to experience significant social and behavior problems than students with mild injuries experience. However, because each student

Figure 21

Myths about Traumatic Brain Injury and Behavior

Myth: Because traumatic brain injuries result in physical damage to the brain, inappropriate behaviors following brain injury cannot be changed.	**Fact:** Students with traumatic brain injuries can learn to respond to environmental stimuli and contingencies and can gain increased self-control with supportive assistance and appropriate intervention strategies.
Myth: Behavior intervention following traumatic brain injury should focus on eliminating maladaptive behaviors.	**Fact:** Many maladaptive behaviors are functional for students following a traumatic brain injury. These behaviors may be used as communication or may act as stimuli that bring about desired changes in the student's environment. Intervention should focus on understanding and manipulating factors that elicit challenging behaviors and increasing appropriate, prosocial behaviors.
Myth: Inappropriate behaviors are intentional.	**Fact:** Many students with traumatic brain injuries have reduced control over their behavior, and behaving appropriately may require inhibitory skills that the student no longer has.
Myth: Behavior management strategies do not work for students with traumatic brain injuries.	**Fact:** Many behavior management strategies can be successful with students with traumatic brain injuries.

with traumatic brain injury is unique, a student with a relatively mild brain injury may have significant behavior difficulties, whereas a student with a severe injury may not.

Social and behavior problems following a traumatic brain injury usually result from a complex set of interactions. Factors from three sources interact and influence behavior: the student, the injury, and the student's environment (including other people).

A student's pre-injury temperament and personality may influence his or her behavior following a traumatic brain injury. The student with behavior problems before injury likely will continue to have behavior problems that may even increase in severity or frequency after injury. Other pre-injury factors, such as the student's cognitive and social skills, home environment, and support network, also may affect the behavior of a student who has sustained a traumatic brain injury.

Several factors regarding the injury also influence a student's behavior following a traumatic brain injury (Savage and Wolcott, 1988). The location of the injury, severity of the injury, and length of coma all may play a role in the behavior of a student with a traumatic brain injury. Factors that influence behavior following brain injury are so complex that predicting which students will experience behavioral difficulties and how those difficulties may be manifested is difficult to do using information about the injury only.

The time elapsed since the injury also may affect a student's behavior. In general, challenging behaviors resulting from traumatic brain injury (such as agitation, irritation, and confusion) resolve over time as the student gains increased orientation, cognitive and language skills, and behavioral control. Conversely, challenging behaviors may emerge with recovery as the student gains greater awareness of his or her deficits or develops skills (such as motor skills) that increase the potential for risk-taking or self-injury.

Many aspects about the student's environment also affect his or her behavior following a traumatic brain injury. The level and type of stimulation a student receives and the tasks required of the student in relation to his or her abilities may influence a student's behavior. Other environmental factors, including support from family members, peers, school personnel, and other influential people in the student's life, also may affect behavior.

In summary, after an injury, the student's physical, cognitive, language, and social deficits interact with injury, pre-injury, and environmental factors to affect behavior. The student's environment provides the stimuli for behavior. Thus, school settings with adequate instructional and social support as well as clear expectations and appropriate task demands can help facilitate the student's behavioral control.

Stage of Recovery

Challenging behaviors following a traumatic brain injury often correspond to the student's stage of recovery. Certain behaviors are more likely to occur at specific times during recovery and may be shorter-lived; other behaviors may occur across recovery periods and be long-lasting.

Recovery from brain injury can be divided into three broad stages (Rosenthal, et al., 1990).

Stage 1. During the acute or early stage of recovery, students often display agitation, confusion, extreme impulsivity, regression in skills and behaviors, and impaired information processing. Students in comas will be unresponsive or will become more agitated as they emerge from coma. This stage usually occurs in a hospital or rehabilitation setting, but may occur in schools.

Stage 2. During the middle stage of recovery, students may be intolerant of stimulation (such as touch or noise), increase their behavioral demands on family and other care and service providers, and deny or be unaware of deficits. The student also may display disinhibition.

Stage 3. During the third stage of recovery, lasting cognitive, sensory, or other deficits may become apparent. These deficits, combined with an increased awareness of limitations, may lead to increased frustration, depression, anger, and risk taking.

Long-term behavioral outcomes of traumatic brain injury often include inattention, overactivity and restlessness, impulsivity, socially disinhibited behavior, and poor judgment.

Age at Injury

The student's developmental stage at the time of injury affects the acquisition of skills being developed at the time of injury and the type of behavioral challenges the student likely will display. A student's age at the time of injury also affects other people's expectations about the student's competence based on prior learning, which in turn may influence the student's behavior (see Figure 22).

Designing Behavioral Interventions

Changing behavior following a traumatic brain injury often is difficult because multiple factors—physical, neurological, cognitive, language, psychosocial, and environmental—influence behavior. In addition, changing the student's behavior may be difficult because the student's behavioral repertoire is limited, the student has reduced control over behavior, and the challenging behaviors are functional for the student although inappropriate for the environment.

Challenging behaviors often prevent students with traumatic brain injuries from living productively and independently. Therefore, the goal of behavioral interventions is facilitating the development of behavior that allows the highest possible level of independence (see Figure 23).

Observing the Student and Setting

After a traumatic brain injury, a school multidisciplinary team will evaluate the student and determine the need for a special education (see Chapter 4). Members of the team must observe the student in the environments in which the intervention is to be implemented. That is, if an intervention is to be helpful in a particular classroom, it must be based on information gained in that classroom. If the need for an intervention plan is assessed prior to the student's re-entry to school, team members should observe the student in the hospital, rehabilitation setting, or home.

Figure 22

Behavioral Manifestations of Disrupted Development Across Ages

Developmental Stage	Age-related Behavioral Manifestations
Preschool Brain growth is rapid during the preschool years. A traumatic brain injury may interrupt basic development of early motor skills, language learning, and social competence. Deficits in higher-level thinking skills may become apparent later.	• irritability and crying • temper tantrums • frustration • anxiety and withdrawal • fearfulness
Elementary A traumatic brain injury during the elementary school years may interrupt the development of early academic skills, consolidation of academic and social skills, and refinement of motor skills. Deficits in higher-level thinking skills may become apparent later.	• frustration at school • inappropriate social interactions • hyperactivity • short attention span • impulsivity • aggression
Adolescent A traumatic brain injury during adolescence may interrupt a student's sense of self, higher-level problem-solving skills, and social judgment.	• decreased social judgment • decreased anger control • frustration over losses of skills • depression and withdrawal • risk-taking • inappropriate sexual behavior • use of illegal drugs

---

Based on Begali, 1992 and Deaton and Waaland, 1994.

Figure 23

Principles of Behavioral Planning After a Traumatic Brain Injury

- Planning for interventions is best accomplished by a team of teachers, providers of related services, school administrators, and family members. Team members can share valuable resources and information.
- Involving the student (to whatever degree possible) is critical when planning interventions. Interventions that are meaningful to the student, that enlist cooperation, and that motivate the student will succeed more than strategies imposed on the student.
- No two students with traumatic brain injuries are exactly alike. When planning interventions, team members should consider the individual strengths and needs of the student and whether the student is capable of participating in and benefiting from an educational activity.
- Many factors influence the behavior of students with traumatic brain injuries. Team members must understand those factors as they plan interventions.
- Behavior problems and power struggles should be prevented whenever possible. Many challenging behaviors can be prevented by changing either the environment or the antecedents of behavior problems. Power struggles about trivial matters can escalate into larger confrontations.
- The student may be trying to communicate through his or her behavior. The work may be too difficult, the student may need a break, there may be too much stimulation, the student may be physically uncomfortable, or social demands may be too great.
- The least-restrictive strategy should be used to manage behavior. This demonstrates respect for the student, helps maintain his or her dignity, and minimizes the chance that a situation will escalate.
- The student needs to be taught and to practice appropriate behavior, in addition to learning what he or she is not supposed to do.
- Students with traumatic brain injuries usually benefit from consistency in people, places, and activities. Consistent routines can help students with traumatic brain injuries participate successfully in classroom activities.
- Students with traumatic brain injuries may model other people's behavior. If people who work with the student become agitated, raise their voice, or use physical force, the situation may escalate. Calm and composed reactions are more helpful when calming a student.
- Students with traumatic brain injuries may experience intense feelings about their losses, who they once were, who they have become, and how their lives have changed. Like all individuals, students with traumatic brain injuries deserve respect and support as they struggle with difficult emotional issues.

Assessing the Instructional Environment

Behaviors always occur within an environment. A critical step in planning an intervention program is assessing factors within the student's environment that may affect the student's abilities and needs and produce challenging behaviors. A list of environmental factors follows.

- Physical factors (How do the number of students and the level of activity, noise, light, space, and temperature affect the student?)
- The number of environments the student experiences (Does the student move across environments? If so, how similar are the environments? Does the student act differently in different environments?)
- The individuals in the environments (How many different people does the student interact with? Does the student act differently with different people?)
- The time of day (Does the time of day influence the student's behavior?)
- The type of activity (Does the student's behavior differ with the type of activity?)
- The compatibility between the student's abilities and demands (Does the student react differently to tasks with varying demands?)

- The level of instructional support (Is there appropriate instructional support for the student? Does the student's behavior vary with the level of support?)
- The level of social support (Is there appropriate social support for the student? Does the student's behavior vary with the level of support?)
- Knowledge about traumatic brain injury (Do staff members adequately understand the ways the traumatic brain injury affects the student?)

Using Applied Behavior Analysis

The process of applied behavior analysis may help educators develop behavioral interventions. According to applied behavior analysis, behavior occurs or continues because of antecedents to the behavior or consequences following the behavior. Applied behavior analysis involves identifying the antecedents and consequences of inappropriate behavior that can be targets of intervention (Schloss and Smith, 1994).

Generally, applied behavior analysis involves

- identifying and carefully describing the problem behavior,
- measuring the rate (frequency, intensity, duration) of the behavior,
- identifying the antecedents and consequences that maintain both the behavior and the function the behavior serves,
- developing and implementing an intervention plan that alters antecedents or consequences, revising the plan as needed,
- plans to maintain and generalize the effects, and
- evaluating the intervention(s).

Using Standardized Norm-referenced Measures

Sometimes, standardized, norm-referenced assessment measures (for example, measures of social skills and behavior and affective disorders) are helpful in assessing the social and behavioral needs of the student with a traumatic brain injury. However, these measures generally are developed for, and standardized on, students without traumatic brain injuries. Consequently, these measures often cannot be interpreted in a norm-referenced manner. For example, many social-emotional measures include physical complaints (such as headaches and fatigue) as indicators of emotional distress. However, students with traumatic brain injuries may experience such physical events as side effects of the brain injuries. These side effects may be exacerbated by environmental conditions, but may not be reliable indicators of emotional status.

Determining the Behavior's Communicative Functions

Some students with traumatic brain injuries communicate through their challenging behaviors. For example, a student with a brain injury and limited expressive language may express discomfort or frustration by making noises, by rocking back and forth in a desk, or by becoming increasingly agitated. School personnel and family members must determine the message the student is trying to send and help the student find a more appropriate method of communicating that message. To evaluate the communicative function of the student's behavior, school staff members and family members must examine the conditions in which challenging behaviors occur and look for clues to the student's intentional or unintentional message. Educators should consider student characteristics, environment characteristics, and the fit between the student and the environment.

Other Considerations

Students with traumatic brain injuries may have specific deficits that limit the effectiveness or appropriateness of some interventions. The fit between the strategy and the student should be examined, keeping in mind that students with traumatic brain injuries may have

- memory deficits that prevent them from remembering classroom and school rules and contingencies or consequences. Students may not remember what specific behavior is expected of them. They also may forget the rewards for good behavior, especially if it is not immediately available or tangible.
- cognitive deficits that limit their ability to learn new information, including classroom rules or procedures, or to understand cause and effect relationships.
- unique motivations for behavior. For example, a student with a brain injury and limited speech and language may be communicating about fatigue or about task difficulty through behavior rather than words.
- limited planning abilities that prevent them from establishing a goal, planning the steps to attain the goal, and following through. Students

with traumatic brain injuries may not be able to develop or follow through on a plan to use contingencies to change behaviors.

Behavior Management Strategies

When developing a behavior management plan for a student with a traumatic brain injury, evaluating the strengths and limitations of the student is important. Most students with traumatic brain injuries exhibit skill deficits that affect their ability to benefit from behavior interventions.

Considering the student's stage of recovery as well as present and pre-injury functioning also is important. If the student is early in the process of recovery, he or she likely will require more external support in managing behavior. As the student recovers functions, he or she may be able to rely increasingly on self-management strategies. Also, differences and similarities between the student's present and pre-injury functioning may provide insight into psychosocial issues the student may be confronting or intervention strategies that may be successful.

Prevention

The principle behind prevention strategies is avoiding behavior problems before they emerge or interrupting behaviors before they escalate. This does not mean that all demands are removed from the environment. Rather, the goal of these strategies is creating an environment in which a student can control his or her behavior and experience success.

As the student gradually gains new skills, new challenges can be added into the environment to help the student learn to meet them. Many strategies (for example, establishing routines, using pictorial or written lists and schedules, and redirecting behavior) are based on the assumption that confusion, memory and cognitive limitations, stimulation, and taxing task demands are antecedents of the challenging behavior of students following traumatic brain injuries.

By knowing the events, factors, or cues that may influence or elicit challenging behaviors, educators may be able to alter or eliminate them. For example, if the student repeatedly conflicts with another student, revised seating patterns may reduce the opportunity for contact.

Students with traumatic brain injuries also may benefit from advance planning of an acceptable plan or escape route to use when they feel overwhelmed, are losing behavioral control, and need time to calm down. For example, the teacher may identify a place the student will feel safe going to independently, such as the school office, a classroom, the nurse's office, or the gym. This type of strategy allows the student to monitor his or her own behavior and use skills to prevent behavioral outbursts.

Increasing Appropriate Behaviors

One goal of behavior management is to increase appropriate behavior. Even when challenging behaviors (such as aggression) need to be curtailed, the student needs to learn appropriate replacement behaviors that serve the same function but replace unacceptable behavior.

The basic assumption underlying the following strategies is that behavior is influenced by its antecedents (what happens before the behavior) and its consequences (what happens after the behavior). These strategies can be particularly useful for students who have difficulty monitoring the appropriateness of their behavior. External feedback can be helpful in teaching students desirable behaviors. In addition, rewarding appropriate and desirable behaviors can help increase the motivation of students who experience apathy, lack of initiative, or low motivation.

When selecting strategies to increase specific behaviors, educators should consider whether the student needs to

- learn a new behavior (through shaping, prompting or cueing, modeling, or individual or group instruction),
- learn to use a behavior that is within his or her repertoire and is sometimes or partially evidenced (through positive reinforcement, cueing, prompting, or behavioral contracting), or
- use a behavior in additional settings (through positive reinforcement, prompting, behavioral contracting, or cueing).

Positive Reinforcement

Positive reinforcers frequently are used in managing behaviors. For example, giving a treat (primary or concrete reinforcer) or praise (secondary reinforcer) to a student for a job well done is a positive reinforcer if that reward increases the likelihood the behavior will occur again. However, what is reinforcing to different people varies, making the use of positive reinforcement difficult.

Finding out what is rewarding to the student is important before planning to use positive reinforcement. If possible, ask the student what rewards he or she would like to earn. If necessary, ask teachers or family members what they think the student would work toward earning.

Often, planning reinforcers for students with severe brain injuries requires beginning with concrete and tangible items such as stickers. Often this helps the student remember what he or she is working toward because the reinforcers can be kept in sight as the student works. Also, earlier in the recovery process the student with a traumatic brain injury may need reinforcement every time the appropriate behavior occurs. The student may need this high rate of reinforcement to help learn the appropriate behavior and maintain motivation to perform it.

The goal in using tangible reinforcers is to help the student ultimately respond to naturally occurring or social reinforcers for behavior (such as pride in appropriate behavior, increase in friendships, or receiving more privileges). However, students with traumatic brain injuries initially may need tangible reinforcers (such as food, objects, or points to be traded in for rewards) until the student is aware of and motivated by natural reinforcers. Because no one reinforcer is always effective in changing behavior, a variety works best.

Shaping

Shaping involves rewarding behaviors that come increasingly closer to the ultimate desired behavior. For example, if the goal for the student is to work independently for five minutes, the teacher might begin by reinforcing the student for working for one minute, then two minutes, and so forth. The mistake people often make is trying to rush the student into performing the goal behavior too quickly. However, the student with a traumatic brain injury may need rewards for small steps very frequently for an extended period of time.

Prompting or Cueing

Prompting and cueing are techniques for physically or verbally helping a student to perform a desired behavior. For example, a student with a traumatic brain injury may have difficulty carrying out a classroom procedure, such as marking the attendance chart. A verbal prompt (asking the student what he or she is supposed to do when entering the classroom) or physical prompt (guiding the student to the appropriate location) may help to teach the student the routine. However, students can become very dependent on prompts, which necessitates beginning at a level the student needs and fading to a less obvious prompt as the student is ready.

Nonverbal prompts or cues provide the student with feedback about behavior. For example, educators may signal appropriate behavior with a "thumbs up" sign or a head nod. Inappropriate behavior also must be signaled. Lists, assignment books, pictorial reminders, or specific, consistent instructions are other forms of prompts and cues.

Modeling

Modeling involves providing live or videotaped models of the desired behavior in the actual setting or in similar settings. The student with a traumatic brain injury may benefit from observing another student carry out a behavior in an actual classroom situation and from watching the student experience the positive consequences of the behavior. Role plays also may be used. For example, the student may watch another student in a role play avoid a confrontation by walking away from the situation. Modeling alone can be powerful in changing behavior; however, the effect is enhanced by participating in role plays, observing models receiving reinforcement for behavior, and practicing in the natural environment.

Contracting

In this strategy, the student and adult develop a written agreement that outlines the specific, well-defined responsibilities (target behaviors) of the student and the amount and type of reinforcer the student will receive upon execution of the behavior. The student must be capable of performing the desired behavior and have the cognitive and memory competency to understand and be motivated by the contract. Contracts can be an intermediate step between other directed strategies and student self-control strategies.

Planning for Generalization

Like other students, students with traumatic brain injuries may have significant difficulty spontaneously transferring appropriate behaviors to new settings. When planning interventions for the student with a traumatic brain injury, educators should be sure to plan opportunities for the student to recognize the appropriateness of a behavior across settings, to practice the behavior in new settings, and to experience rewards across settings.

Reducing Inappropriate Behavior

Educators use strategies to reduce inappropriate behaviors in conjunction with strategies to increase appropriate behaviors. Following are some methods for reducing inappropriate behaviors.

Examining the Environment

When trying to reduce inappropriate student behaviors, begin by examining the environment to determine if there are things that could be changed to help the student gain behavioral control. Antecedent factors or cues may precipitate the student's undesired behavior. For specific prevention suggestions, refer to the prevention strategies listed earlier in this chapter.

Extinguishing

Extinguishing (planned ignoring) involves removing the consequence that rewarded or maintained a behavior. It works well with behaviors maintained by adult or peer attention. For example, ignoring temper tantrums in young children can teach them they will not be rewarded by getting what they want and will end the temper tantrums. However, these interventions may be difficult to implement because a student who expects attention for a behavior may escalate that behavior to try to gain the attention. Also, behaviors that are threatening to oneself or others cannot safely be ignored and usually are more suited to other interventions.

Reinforcing Incompatible or Alternative Behaviors

A teacher reinforces an incompatible behavior when he or she rewards a student for a behavior that cannot occur at the same time as the target inappropriate behavior. For example, a teacher interested in reducing a student's running in the hall rewards the student for walking in the hall.

Reinforcing alternative behaviors is similar. When reinforcing alternative behaviors, the teacher rewards the student for behavior that can occur at the same time as the inappropriate behavior, but is more acceptable. The intent is to strengthen the appropriate behavior. For example, if a teacher is trying to reduce a student's calling out in class, the teacher rewards the student for raising his or her hand, but not for calling out. For this strategy to be helpful, the teacher must reward the student only when he or she raises a hand without calling out.

Assigning "Time out"

Assigning "time out" is intended to decrease inappropriate behavior by removing all positive reinforcement from the student for a period of time or providing a cooling-off period. This strategy can be effective for students with traumatic brain injuries as long as they understand the procedure and demonstrate behavior change following the procedure. This technique, which can be used positively to provide a student with time to cool down and reflect, always should be used in combination with reinforcement for appropriate behavior.

Introducing Self-control Strategies

Self-control methods of behavior change afford greater responsibility to the student, who evaluates his or her own behavior and applies consequences. Students who have milder injuries or are in more advanced stages of recovery may benefit from self-directed intervention strategies. First, however, educators must determine that the student has the prerequisite cognitive, memory, and executive skills to use these strategies.

Self-monitoring, Evaluation, and Reinforcement

This series of strategies requires the student to monitor his or her own behavior (notice that the behavior has occurred), evaluate whether the behavior was appropriate, and provide the appropriate consequence (Kanfer and Gaelick-Buys, 1991). Self-monitoring alone can produce reactive effects in which monitoring, by drawing the student's attention to the behavior, produces behavior change. Systems of self-monitoring, evaluation, and reinforcement may involve immediate and delayed reinforcers, primary and secondary reinforcers, and varied data collection procedures.

Social Problem Solving

The social problem-solving process involves helping the student identify a sequence of steps to use in problem situations. These steps usually include identifying the goal, generating alternative solutions, identifying the consequences of the solutions, choosing a good solution, and implementing and evaluating the solution. Social problem-solving models focus on teaching students a thinking process they can use when confronting problems. An advantage of this intervention approach is that teaching the problem-solving model can be incorporated easily into classroom curriculum. Peers, who also are using social problem-solving, then can provide support for the student with a traumatic brain injury in difficult situations.

Relaxation

Relaxation strategies often help the student gain behavioral control by reducing tension, anxiety, agitation, or anger through physical relaxation. Methods of relaxation that can be helpful in school settings include deep muscle relaxation, imagery-based procedures, and deep breathing (Forman, 1993). These techniques are most useful when students learn to implement the relaxation techniques themselves to gain behavioral control. However, teachers may suggest that the student try to relax.

Deep muscle relaxation involves alternately tensing and relaxing muscle groups throughout the body. For each muscle group, the student is instructed to tense the muscle(s), maintain the tension and note the tense feeling, relax the muscle(s), and notice the difference between the feelings of tension and relaxation (Kratochwill and Morris, 1991).

Imagery procedures may be used in combination with deep muscle relaxation. For example, a student may pretend he or she is squeezing a lemon while tensing and relaxing arm and hand muscles. Other imagery procedures ask students to imagine they are in a relaxing setting and to focus on the relaxed feeling they experience in that setting.

Deep breathing also can be used to help students relax. This strategy usually is combined with deep muscle relaxation. The student is taught to take a deep breath and hold it briefly. Then, the student exhales and relaxes the entire body.

Introducing Group Strategies

Group interventions may be appropriate for some students with traumatic brain injuries who can benefit from peer feedback, support, and modeling. Groups provide opportunities for students with traumatic brain injuries to practice new skills or to strengthen existing skills in a structured social setting that approximates reality. Didactic opportunities, repeated rehearsal of skills, role-plays, scripts, modeling, and videotaping can be incorporated into the group intervention process.

Groups may have specifically defined content (such as anger management or social skills training), or they may be supportive groups that define content based on needs of individual group members. Prior to group involvement, the student must be evaluated for the ability to accept honest peer feedback or to view videotapes that might highlight deficits. Although the composition of students in the group depends on group goals, peer models usually are desirable in groups.

Teaching Social Skills

Models for solving social problems focus on teaching the students a thinking process they can use when confronting problems. An advantage of this intervention approach is that teaching the problem-solving model can easily be incorporated into classroom curriculum. Peers, who also are using social problem-solving, can then provide support for the student with a traumatic brain injury in difficult situations. Many students with traumatic brain injuries benefit from structured individual and group teaching of social skills. Social and interpersonal skill deficits are among the most debilitating deficits faced by students with traumatic brain injuries. However, social skills are complex. They involve competencies in attention, perception, decoding, self-monitoring, decision-making, and evaluation. When teaching social skills to students with traumatic brain injuries, educators should

- determine whether the student has a skill deficit (does not have the skill) or a performance deficit (does not perform the skill);
- determine whether the student has competing behaviors that need to be eliminated or reduced;
- identify the student's specific needs and design social skills interventions that target those deficits,
- ensure that the student has the prerequisite competencies to learn and perform the target skill,
- provide ample opportunities for practice of specific skills in one-to-one or group settings;
- provide direct feedback about social skills, and
- ensure that the student has opportunities to practice skills under supervision in real-life settings.

Many resources and structured programs for increasing social skills have been developed in recent years. For example Elliot's and Gresham's *The Social Skills Intervention Guide: Practical Strategies for Social Skills Training* and McGinnis's and Goldstein's *Skillstreaming* series provide target behaviors to address social skills.

Creating a "Circle of Friends"

The "Circle of Friends" strategy (Perske and Perske, 1988) can be a powerful social intervention for students with traumatic brain injuries. The principle behind this strategy is to provide a social support network for the student that is available to the student during school and other activities. Often after injury, a student's contact with former friends diminishes, leaving the student isolated at a time when he or she particularly needs peer contact and support.

Educators using the Circle of Friends process identify a network of peers who are genuinely interested in developing and maintaining a supportive friendship with the student with a traumatic brain injury. The goal of the Circle of Friends is to facilitate social interactions and friendship-building and to support the student by being available to help problem-solve about specific issues or situations. For example, the circle of friends might help the student transition between classes, ride on the school bus, go to an after-school function, or go shopping. The critical component of a circle of friends is that all members believe they are building a friendship circle that will lead to fulfillment and growth for all.

Using the McGill Action Planning System (MAPS)

MAPS is a systems intervention that facilitates planning for the educational services of students. The student's parents or other family members, teachers, and related services providers meet with the student (when appropriate) and members of the student's support network. The goal is to develop an effective action plan for the student with a traumatic brain injury. The student's parents describe the student's history and their goals for the student. All participants share in the process of identifying the student's strengths and talents. Finally, participants identify what an ideal day would look like for the student and how to bring it about.

Introducing Communication Strategies

Identifying Intent

Educators may choose to manage challenging behaviors by identifying the communicative purpose of behavior and then responding to the student's needs and helping the student find an appropriate means of communication. This approach rests on the assumption that behavior is meaningful—that students with traumatic brain injuries are trying, intentionally or unintentionally, to communicate a message through their behavior.

Teaching Active-Reflective Listening

Students with traumatic brain injuries often have difficulty monitoring their communication messages and interpreting responses to their communications. Active or reflective listening provides direct feedback to the student about whether the intended content of the message was sent and received. These strategies involve listening to the content of communication, identifying the feelings behind the content, and reflecting back to the student the content and feelings. Effective listening strategies can help the student clarify feelings, learn to communicate more clearly, facilitate further sharing of feelings or needs, and identify strategies to help the student.

Developing Scripts

Some students with traumatic brain injuries can benefit from scripts that help them learn or remember how to act in specific situations. Scripts may be sequences that naturally occur or are created (for example, routines for mealtimes and dressing or academic activities) or they may actually be written scripts that tell the student what to say in certain situations.

Scripts of both kinds can be helpful to the student who has difficulty remembering sequences or becomes agitated or confused in unfamiliar circumstances. A student can be taught to say, for example, "I'm tired. I need a break." or "I need help." or "Good morning, Mrs. Smith. How are you?" or "Don't tease me. I don't like that." Initially students may benefit from tightly controlled scripts, with greater flexibility built in as the student's skills increase.

Closing Comments

School staff members and family members attempting to change the behavior of a student with a traumatic brain injury may become discouraged by the slow rate of change. It may be helpful to remember that

- interventions may take longer than expected to be effective,
- students may require added practice in learning,
- students may need to experience consequences repeatedly,
- extrinsic rewards may be more successful than intrinsic rewards,
- students may initially require a high rate of reinforcement of appropriate behavior,
- environmental approaches may be more helpful than mastery approaches initially, and
- not all interventions will be successful.

Medications often can be important in treating challenging behaviors following a traumatic brain injury. However, they also can produce undesirable side effects that can influence behavior. School staff members working with students with traumatic brain injuries must be aware of the medications students are taking and the side effects.

Some students with traumatic brain injuries experience significant adjustment problems that warrant referral to a mental health professional familiar with traumatic brain injuries outside the school setting.

Following a traumatic brain injury, students struggle with their own sense of loss. They have experienced a sudden trauma that, in many cases, they never will recover from completely. Students with brain injuries differ in the extent to which they are consciously aware of their losses and the disruption of their lives. Many students retain the sense of "who I was" and have difficulty incorporating losses and changes into their sense of self.

Counseling or individual therapy may provide a supportive setting for the student, in which he or she finds acceptance and feedback while confronting losses and constructing a new self-image. The therapist must attend to neurologic, cognitive, memory, and emotional factors that may influence the therapy process.

Some students with traumatic brain injuries may require therapeutic environments that are more structured than school settings. These students may benefit from a highly structured therapeutic milieu (such as a rehabilitation setting or residential treatment setting) in which behavioral skills are carefully taught and reinforced and in which behaviors injurious to oneself and others are prevented.

If a student requires this type of setting, school staff members must work with milieu staff members to ensure that the strategies the staff uses and the skills the student learns will eventually transfer to the school setting. Some behavior management plans developed in highly controlled settings are impractical for the school setting. Close cooperation and communication between staff members at the school and the milieu setting will facilitate the student's successful transition back to school.

When choosing strategies to develop and implement an intervention plan, the student's skills profile should be considered. For example, if the student is unaware of cause and effect relationships, strategies that focus on consequences will be ineffective. Also, if the student has memory limitations, immediate rewards will be more effective than delayed rewards. The strategies listed in Figure 24 may be helpful in reducing challenging behaviors and teaching appropriate behaviors across settings and individuals.

Figure 24

Specific Interventions

Disinhibition

Example
The student uses inappropriate language in classes

Limitations or Factors that May Influence Behavior

- Neurological changes leading to reduced behavioral control
- Reduced self-awareness and self-monitoring skills
- Reduced ability to read social cues
- Reduced tolerance for frustration
- Limited behavioral repertoire
- Inability to discriminate among settings and people

Sample Interventions

- Directly teach student what words are unacceptable
- Brainstorm acceptable alternatives with student; make a list
- Provide opportunities to practice alternatives
- Role-play appropriate responses
- Reinforce appropriate language
- Reduce frustration
- Avoid reinforcing behavior
- Provide structure to help student self-monitor
- Teach other students how to react

Example
The student is overly affectionate with peers and teachers

Limitations or Factors that May Influence Behavior

- Neurologic changes leading to reduced behavioral control
- Reduced social judgment
- Inability to read social cues and feedback
- Need for emotional support
- Social-emotional immaturity following injury
- Cognitive or developmental losses
- Inability to discriminate among people

Sample Interventions

- Teach and model alternatives, such as a handshake or pat on the shoulder
- Provide opportunities to practice alternatives
- Use peer models and role plays
- Teach discrimination among individuals
- Make a list of people it is OK to hug
- Set clear, concrete limits about behavior
- Reinforce appropriate behavior
- Educate peers and school staff
- Provide necessary supervision to ensure safety

Aggression

Example
The student hits other students on the playground and in the lunchroom

Limitations or Factors that May Influence Behavior

- Reduced ability to filter internal and external stimuli
- Agitation in highly stimulating environments
- Reduced ability to read social cues and intentions
- Limited means of gaining social attention or interaction
- Inability to self-monitor
- Reduced problem-solving skills
- Limited behavioral repertoire

Sample Interventions

- Evaluate communicative intent of behavior: what is the student trying to say?
- Teach alternative forms of communication; for example, teach appropriate ways to approach others or to join in activities
- Determine antecedents and consequences of behavior; specific settings, students, and activities.
- Identify cues of escalating behavior
- Examine specific traumatic brain injury related deficits, for example, cognitive, perceptual, physical; do they influence behavior?
- Use peer modeling and role playing
- Reduce stimulation
- Provide structured activities with adult supervision
- Reduce time in stressful environments; gradually increase as student gains ability

Example
The student becomes aggressive in response to minor conflicts or hassles, such as the lunchroom line, needing to wait to use the phone, a late bus

Limitations or Factors that May Influence Behavior

- Neurologic damage to specific areas of the brain
- Increased irritability
- Reduced repertoire of skills
- Reduced tolerance of frustration
- Decreased self-monitoring
- Decreased cognitive problem solving
- Emotional stress related to losses
- Sense of lack of control

Sample Interventions

- Structure the environment to reduce hassles
- Help the student anticipate potential upcoming hassles
- Help the student identify alternatives to aggressive behavior
- Establish goals for behavior with the student
- Establish a behavioral contract with the student
- Model and role-play alternatives
- Give guided practice in real situations
- Develop a self-monitoring system
- Help the student identify and express feelings
- Provide emotional support or counseling
- Enlist a peer buddy or a circle of friends
- Use the MAPS process
- Reinforce appropriate behavior
- Provide coaching by an adult or peer

Confrontational Behavior

Example
The student refuses to attempt an activity

Limitations or Factors that May Influence Behavior

- Lack of confidence
- Fear of failure
- Lack of comprehension of task demands
- Delayed response time
- Need for control
- Unawareness of need for certain tasks or activities
- Influence of prior experience (either at similar task or an unrelated experience that just took place)
- Physical discomfort

Sample Interventions

- Be sure task demands match the student's abilities
- Set clear, reachable goals; ensure success
- Break tasks into small steps
- Provide an extrinsic reward
- Begin an activity with other students; reinforce them
- Allow the student adequate transition time
- Give the student choices
- Avoid power struggles; do not argue with the student
- Provide opportunities for students to explore and voice feelings
- Plan breaks during an activity
- Be sure a student's physical needs are met
- Examine conditions in settings in which the student is more successful

Example
The student questions the teacher's authority ("You can't tell me what to do!")

Limitations or Factors that May Influence Behavior

- Feelings of loss and powerlessness
- Need for control
- Fear of failure
- Awareness of deficits
- Lack of awareness of deficits
- Lack of comprehension of the instructions or task
- Reduced self-monitoring
- Inability to read social cues
- Reduced awareness of social roles
- Impulsivity

Sample Interventions

- Avoid power struggles or arguments
- Ignore a behavior if possible; sometimes students will protest, but comply
- Identify the message the student is really trying to send
- Redirect to another activity if necessary
- Clarify task demands
- Reduce task demands if necessary
- Provide choices within the activity (for example, which part of the activity to do first) to give student some control
- Identify cues that the student's behavior is escalating
- Establish cues to use with student to signal that his or her behavior is becoming inappropriate
- Establish an "escape route" for the student

Impulsivity

Example
The student raises his or her hand immediately as the teacher begins to ask a question

Limitations or Factors that May Influence Behavior

- Neurologic deficits leading to reduced impulse control
- Reduced self-monitoring
- Reduced judgment
- Reduced ability to listen and reflect
- Strong associations between stimuli and response
- Anxiety

Sample Interventions

- Develop physical or verbal cues to help the student wait
- Provide practice in role play and real settings
- Warn the student that a question is coming
- Rehearse specific questions and answers in advance
- Teach the student a sequence of steps to take before raising his or her hand
- Provide physical support for waiting

Example
The student grabs other students' materials

Limitations or Factors that May Influence Behavior

- Neurologic deficits that reduce impulse control
- Lack of appreciation of personal space or ownership
- Difficulty delaying gratification
- Overstimulation
- Difficulty reading social cues
- Increased irritability
- Anxiety
- Anger

Sample Interventions

- Be sure the student has his or her own materials
- Set clear rules about materials
- Examine and alter specific antecedents of behavior
- Teach alternative ways of getting needs or wants met (for example, asking to share)
- Provide positive practice
- Alter the environment to reduce stimulation
- Reinforce appropriate behavior
- Educate peers about how to respond

Egocentricity or Insensitivity

Example
The student has to be first in line, first to be called on, first to receive materials

Limitations or Factors that May Influence Behavior

- Reduced social awareness
- Social-emotional immaturity
- Lack of awareness of deficits
- Difficulty self-monitoring
- Impulsivity
- Need for control
- Dependence on routines
- Inability to see cause and effect relationships (such as, effect of his or her behavior on others)

Sample Interventions

- Set expectations in advance
- Teach turn-taking in one-on-one, small group, and large group settings
- Provide defined opportunities to be first
- Provide practice not being first
- Reinforce appropriate behavior
- Reinforce peer models
- Develop cues to help student wait

Example
The student makes unkind remarks to other students

Limitations or Factors that May Influence Behavior

- Inability to take others' perspectives
- Limited insight
- Reduced awareness of others' feelings
- Poor cognitive problem-solving
- Need for attention
- Inability to interpret subtle feedback

Sample Interventions

- Teach appropriate social remarks
- Provide practice, role plays, modeling
- Provide peer or adult coaching
- Provide scripts for some situations
- Reinforce appropriate behavior
- Provide direct feedback about impact of social communications across settings
- Draw on the support of a "circle of friends"
- Provide support for peers

Emotional Lability

Example
Student cries in response to slight corrections, criticisms

Limitations or Factors that May Influence Behavior

- Reduced emotional control
- Tendency to catastrophize
- Inability to differentiate between types of feedback
- Sadness over losses
- Heightened awareness of deficits
- Low self-esteem
- Indication of student's struggle to perform

Sample Interventions

- Ensure ample success
- Reinforce success
- Help the student appreciate his or her strengths
- Help the student differentiate between types of criticism or feedback
- Prepare the student prior to giving feedback
- Begin with positive feedback
- Role-play responses to critical feedback
- Help the student learn to evaluate his or her own performance
- Provide supportive counseling

Example
Student laughs at inappropriate times

Limitations or Factors that May Influence Behavior

- Reduced awareness of own behavior
- Inability to discriminate salient differences between settings
- Lack of awareness of social cues
- Inability to notice and model others' behavior
- Reduced attention to surroundings
- Difficulty filtering internal and external stimuli
- Reduced emotional control

Sample Interventions

- Review rules for behavior in each setting in advance
- Highlight differences between settings
- Develop signals or cues about behavior
- Provide direct feedback
- Reinforce appropriate behavior
- Avoid reinforcing inappropriate behavior with excess attention
- Teach peers to react to the student appropriately
- Reduced emotional control
- Limit settings until the student gains greater behavioral control

Withdrawal

Example
The student refuses to participate in small-group activities

Limitations or Factors that May Influence Behavior

- Lack of confidence
- Awareness of deficits
- Difficulty handling the pace or stimulation of the group
- Fear of embarrassment
- Uncertainly about the role or task demands
- Low motivation or interest

Sample Interventions

- Carefully define or limit role and task demands
- Allow the student to observe a group
- Include a member of the student's "circle of friends" in the group
- Create individual goals for the student that may differ from goals for other members
- Provide adult or peer support
- Examine factors (such as noise, pace, physical proximity) that may affect the student
- Educate other members of the group about roles and procedures
- Use the MAPS process

Example
The student does not answer in class

Limitations or Factors that May Influence Behavior

- Low motivation
- Underarousal
- Fear of failure
- Embarrassment about speech or language
- Delayed response time
- Lack of comprehension
- Depression

Sample Interventions

- Be sure the student comprehends the content
- Find content the student enjoys or is knowledgeable about
- Practice some specific questions and answers in advance
- Use scripts
- Begin with questions requiring only one word or signal (for example, head nod) responses
- Allow ample time to respond
- Reinforce small steps
- Role play
- Practice first in a one-on-one setting; then move to small-group and large-group settings
- Don't pressure the student
- Obtain further evaluation if depression is suspected

References

Begali, V. *Head Injury in Children and Adolescents.* 2nd ed. Brandon, VT: Clinical Psychology Publishing Company, Inc., 1992.

Deaton, A.V., and P. Waaland. "Psychosocial Effects of Acquired Brain Injury." In *Educational Dimensions of Acquired Brain Injury,* R.C. Savage and G.F. Wolcott, Eds. Austin, TX: Pro-ed, 1994.

Forman, S.G. *Coping Skills Interventions for Children and Adolescents.* San Francisco: Jossey-Bass, 1993.

Kanfer, F.H., and L. Gaelick-Buys. "Self-management Methods." In *Helping People Change: A Textbook of Methods: Fourth Edition.* F.H. Kanfer and A.P. Goldstein, Eds., 1991.

Kratochwill, T.R., and R.J. Morris. *The Practice of Child Therapy: Second Edition.* Maxwell House, NY: Pergamon Press, 1991.

Lehr, E. *Psychological Management of Traumatic Brain Injuries in Children and Adolescents.* Rockville, MD: Aspen Publishers, Inc., 1990.

McGinnis, E., and A. Goldstein. *Skillstreaming the Elementary Child: A Guide for Teaching Prosocial Skills.* Champaign, IL: Research Press Company, 1984.

Perske, R., and M. Perske. *Circle of Friends.* Nashville: Abington Press, 1988.

Rosenthal, M., E.R. Griffith, M.E. Band, and J.D. Miller. *Rehabilitation of the Adult and Child with Traumatic Brain Injury.* 2nd ed. Philadelphia: F.A. Davis Company, 1990.

Savage, R.C., and G.F. Wolcott. *An Educator's Manual: What Educators Need to Know About Students with Traumatic Brain Injury.* Southborough, MA: National Head Injury Foundation, Inc., 1988.

Schloss, P.J., and M.A. Smith. *Applied Behavior Analysis in the Classroom.* Boston: Allyn and Born, 1994.

Providing Therapy 8

Children who have sustained a traumatic brain injury often have physical impairments. Some examples of physical impairment following a traumatic brain injury are hemiparesis, spasticity, ataxia, balance and coordination problems, motor planning problems or apraxia, decreased motor control, and fatigue. These physical deficits affect all facets of the student's daily functioning. Figure 25 provides general definitions and examples of common physical impairments.

These physical changes are addressed by occupational therapy, physical therapy and speech and language therapy. These therapies contribute valuable information about how impairments affect the student's functional performance, movement, communication, learning, and social interaction. The occupational therapist, physical therapist, and speech and language pathologist plan interventions to address these impairments and provide treatment services. These interventions are most effective when provided by a collaborative team approach. This method encourages comprehensive assessment of the student's strengths and deficits and integration of the observations and perspectives of several disciplines in treatment plans. Each discipline must consider the cognitive and psychosocial changes that are also a result of a brain injury and incorporate this in the assessment and treatment approach.

Occupational therapy, physical therapy, and speech and language therapy are services that a student with a traumatic brain injury often receives from the beginning of hospitalization, throughout rehabilitation, and following discharge to the student's home, community, and school. In the school system, speech and language therapy is a program area. Occupational therapy and physical therapy are "related services" provided if required for a child to benefit from special education (see Chapter 4).

Physical

A student who sustains a traumatic brain injury may have motor deficits that significantly impact many areas of function. Motor impairments affect body image, self-esteem, mobility, activities of daily living, motor performance, academic skills, and age-appropriate functions.

For a student with a traumatic brain injury, motor impairments tend to be more visible than other deficits. Although many people erroneously use recovery of motor functions as a predictor of overall progress, motor recovery may not parallel the recovery of cognitive function because different parts of the brain and different mechanisms control these diverse functions.

Brain injury during infancy or preschool years may interfere with developmental potential. The full effects may not appear until years later. Brain injuries during infancy may interfere with the development of basic motor components and patterns from which higher-level skills develop. This prevents the development and experience of normal motor skills.

During the preschool years, expansion and experimenting with basic motor components occur in conjunction with the learning of preacademic skills, such as fine-motor manipulation, dressing, toileting, and independent mobility.

Traumatic brain injury has a significant effect on visual-motor and perceptual skills, agility, motor

Figure 25

Definitions and Examples of Common Motor Deficits

Physical Deficit	Definition	Example
Apraxia	Inability to initiate, sequence, and execute purposeful motor activities.	The student may have trouble figuring out how to get from one position to another or from one place to another.
Ataxia	Difficulty coordinating movements, especially with injuries of the cerebellum.	Difficulty with postural control in sitting or standing position. The student may exhibit increased body sway, staggering with walking, or tremors in arms and legs.
Coordination problems	Difficulty performing smooth, controlled motor movements. This is often seen with activities that require use of both hands at the same time or arms and legs simultaneously.	Difficulty catching a ball with one or both hands or kicking a ball. Difficulty with precise hand movements for eating or writing.
Paresis or paralysis	Muscular weakness or loss of voluntary movement.	Inability to walk, write, or care for himself or herself.
Orthopedic problems	Injury to the muscles, bones, or joints in the body.	Fracture to a leg will affect the student's mobility and activities of daily living.
Spasticity	An abnormal amount of increased muscle tone, which interferes with voluntary movement.	Difficulty bending or straightening the arms and legs makes positioning difficult. Independent functional movement is difficult, particularly fine movement.
Balance problems	Inability to maintain body posture while walking, standing, or performing an activity.	The student may have difficulty walking safely in crowded hallways or lunch rooms.
Impaired speed of movement	Inability to perform movement with speed and precision.	Difficulty on timed motor tests. Problems with sorting, sequencing, and organizing activities in a timely manner.
Fatigue	Decreased endurance for daily activities.	Student may be able to walk independently but needs a wheelchair for long distances or rest periods during the day.

performance for sports and play activities, and the ability to solve motor problems, which are especially important in school activities. Other physical injuries, such as orthopedic fractures, spinal cord problems, and peripheral nerve injury, may also be sustained during the brain injury and result in additional motor deficits.

Influence of Cognitive and Behavioral Deficits on Motor Function

The cognitive and behavioral deficits resulting from a traumatic brain injury influence the student's motor skills and safety. For example, impulsivity, risk-taking behaviors, and decreased judgment may place the student with balance and motor control problems at greater risk of injury to himself or herself and others.

Lower frustration levels and inappropriate behavior may appear when the student is trying to learn a new motor task or is challenged by an activity that the student could previously perform without difficulty. Memory deficits and a decreased attention span may make learning, retaining, and retrieving a new or old motor task more difficult. Cognitive deficits may affect how and what the student learns in regard to motor tasks whereas behavioral deficits may influence the student's motivation to learn new motor activities.

The interplay of cognitive, behavioral, and motor impairments for a student with a traumatic brain injury may become apparent during structured motor activities. A student with a traumatic brain injury may have difficulty with standardized motor assessments, physical education, and sports activities requiring the student to listen to directions, remember rules, take turns, and display motor skills with agility and precision.

Physical Therapy

The physical therapist at the rehabilitation center is part of the team of professionals involved in helping the student and family following a traumatic brain injury. The primary focus of rehabilitative physical therapy is helping the student to recover motor skills. The student at the rehabilitation center typically receives two physical therapy sessions each day, depending on the student's recovery status.

Physical therapy changes as the student's recovery improves. Based on the Glasgow Coma Scale and the Adult Rancho Los Amigos Cognitive Scale, during levels I through III (when the student shows no response or a generalized response), physical therapy focuses on maintaining joint mobility, body alignment and position, and sensory stimulation.

During levels IV through VIII (when the student is able to follow commands and continues to show more appropriate, purposeful behavior), physical therapy focuses on mobility, transfer skills, activities of daily living, and proficiency of motor abilities, which may involve adaptive equipment.

Adaptive Equipment

Adaptive equipment may be necessary to improve the student's functional abilities and enhance independence. Following a brain injury, a student may require specific adaptive equipment (for example, a commode for toileting) to complete activities of daily living.

A student with a moderate or severe brain injury may require a seating or mobility system. The seating system helps maintain proper postural alignment of the head and trunk to prevent soft tissue contractures and orthopedic changes (for example, scoliosis) to developing bony structures. This allows the student to focus better visually, attend to classroom activities, and stabilize the trunk for improved arm function.

The seating system may be attached to, or separate from, a mobility base, such as a wheelchair. Depending on the student's cognitive function and motor impairments, he or she may require a manual or power wheelchair as a means of mobility.

A student with a traumatic brain injury also may need an assistive device for walking, to improve balance or gait. A walker with or without wheels, crutches, or a cane all provide extra stability for a student. Orthotic braces, such as the ankle foot orthoses, fit inside the student's shoe and may improve gait and increase stability. Students who demonstrate significant spasticity, especially in the legs, may need inhibitive casting to decrease spasticity.

A process called "serial casting" uses varied casts to gradually stretch muscles and soft tissues around a particular joint affected by significant loss of range of motion. This is most common at the ankle joint. After the student regains range of motion, he or she may use an orthoses to maintain the range and prevent contracture or shortening of the structures.

BEST COPY AVAILABLE

School Physical Therapy

Before a student with a traumatic brain injury is discharged from the rehabilitation center, the hospital or clinical physical therapist should share information about the student's motor skills and functional abilities with school staff members, especially the school physical therapist.

Members of the student's multidisciplinary team decide whether the student with traumatic brain injury needs physical therapy in the educational environment. Federal and state laws require school districts to provide physical therapy if the therapy is necessary for the student to benefit from special education.

School physical therapy differs from rehabilitative or clinical physical therapy in that school physical therapy focuses on the student's ability to function and participate in the school environment. When a student with motor impairments is discharged from the hospital and re-enters school, the student may, for a period of time, receive both outpatient physical therapy and school physical therapy.

Assessment. Testing helps the school physical therapist assess the student's motor skills following a traumatic brain injury. Assessment needs to be flexible and ongoing to correspond with changes in cognition and behavior.

Standardized tests help establish baseline performance and reveal subtle problems that are not easily observed during functional tasks. However, most tests are not standardized for students with traumatic brain injury, so results cannot be norm-referenced.

Criterion-referenced tests and observation may provide more useful information about the student's abilities to function in the school environment.

The school physical therapist may assess a student's range of motion, muscle strength and tone, sensation, posture, postural reflexes, motor planning, coordination, and endurance. The physical therapist evaluates how deficits in these areas impair the student's ability to "functionally" move in the school setting.

The physical therapist also considers age-appropriate tasks and motor skills. For example, the therapist evaluates not only whether the student can walk or manage a wheelchair independently, but also whether the student can safely get from one classroom to the next, manage a locker, and get to class on time.

Treatment. School physical therapy for the student with a traumatic brain injury emphasizes relearning previously used motor activities, facilitating new gross motor skills, learning compensatory strategies to overcome motor impairments, or adapting equipment or the environment so the student can functionally move in the school setting.

The school physical therapist may provide the student's treatment directly or he or she may collaborate with teachers and other staff members to integrate the student's acquired or relearned motor skills into classroom activities. The school physical therapist also may delegate the student's therapy treatment to a physical therapist assistant, with the therapist determining the level of supervision required based on the assistant's training, experience, and nature of the therapy required by the student.

For the student who is receiving homebound instruction, school physical therapy may focus on handling and positioning, maintaining joint mobility and skin integrity, transfers, and use of adaptive equipment.

Occupational

For a student with traumatic brain injury, occupational therapy uses purposeful activity to maximize function, prevent further disability, and achieve health and productivity (Med 19, Wisconsin Administrative Code). Purposeful activity always occurs within a specific environmental context, which includes time, place, people, and objects. Because these contexts change over the entire continuum of care, from the intensive care unit to the school and community, occupational therapy intervention strategies also change. Central to occupational therapy intervention across environments is a functional approach, which has as its goal the achievement of competence in occupational performance areas. Occupational performance areas mean the functional activities that occupational therapy addresses, including:

- activities of daily living,
- work and productive activities (including educational activities), and
- play and leisure activities.

The purposeful activities within these performance areas require a student to call upon specific skills and attributes. These include

- sensorimotor components,
- cognitive integration and cognitive components, and
- psychosocial skills and psychological components (Med 19.02(9) and (10)), Wisconsin Administrative Code).

Within the framework of cognitive rehabilitation, occupational therapy uses daily occupations and relevant environments that challenge components of performance appropriately (Abreau, et al., 1994). In the acute phases of a student's injury, a functional approach includes

- identifying relevant and valued people, places, objects and activities in a student's life;
- maintaining readiness for future activities through body positioning and passive or assisted movement; and
- assisting the student to reestablish a balance in arousal states and responses to sensory stimulation.

These interventions begin while a student is comatose and are modified throughout the student's rehabilitation. Occupational therapy intervention during the rehabilitation phase is determined by

- the student's age, past interests and activities, and family goals and values;
- the student's expected environments following discharge from the hospital or rehabilitation center; and
- the nature of the student's disability.

If a student is at least two and one-half years old but is not old enough to have graduated from high school, it is likely that school will be an expected environment. The hospital occupational therapist may visit the school or talk with school staff members, as well as the student's parent(s), to understand the performance expectations and specific environments the student will face in school. The occupational therapist then can identify age-appropriate and contextually relevant rehabilitation goals in activities of daily living, educational activities and play activities which will prepare the student for real life outside the hospital.

School Occupational Therapy

Ideally, the multidisciplinary team from the student's school district refers the student for an evaluation while the student is in the hospital or rehabilitation center. If the team suspects occupational therapy will be needed, an occupational therapist will be appointed as a member of the multidisciplinary team.

Before the school occupational therapist can evaluate the student, the therapist needs a referral for occupational therapy from a licensed physician. If the multidisciplinary team finds that the student has a disability and needs special education and the related service of occupational therapy, the hospital occupational therapist and school occupational therapist collaborate as members of their respective teams to ensure the student's smooth transition to the home, school and community. The hospital occupational therapist contributes a working knowledge of

- the student's present levels of occupational performance;
- the sensorimotor, cognitive and psychosocial components that support or interfere with the student's performance; and
- the student's and family's goals, expectations, and limitations.

The school occupational therapist brings a knowledge of the school environment and the expectations that the student will face in

- self-care in school,
- moving through the school environment,
- assuming the student role,
- expressing information, and
- acquiring information (Bundy, 1991).

The student may have additional rehabilitation needs in the home and community, which will not be addressed in school. For a student with such needs, hospital discharge planning should include services of a community or agency occupational therapist to continue the rehabilitation process.

Like occupational therapy in the acute and rehabilitation phases, school occupational therapy is based on an assessment of performance areas and components within relevant contexts. Most standardized or norm-referenced tests used in occupational therapy with students focus only on the assessment of sensorimotor components in an artificial context. While these can be useful in helping the occupational therapist pinpoint which sensorimotor components interfere with specific performance, they rarely take into account the other factors that influence the performance of real life tasks, such as

- attention,
- motivation,
- memory,
- competing thoughts and emotions,
- organization,
- planning,
- problem solving,
- relationships with others, and
- physical attributes of the environment.

A particular sensorimotor component must be valued and needed in daily or anticipated occupations and environments for it to be addressed in occupational therapy intervention. Assessment of the student performing age-appropriate tasks in natural environments is necessary for the development of meaningful intervention.

Griswold (1994) describes an environmental assessment called "the classroom observation guide." Occupational therapists use this assessment to understand the unique structure and culture of a classroom. During a 30- to 40-minute observation in the classroom, the occupational therapist identifies the activity taking place and determines the

- purpose,
- objects used,
- time required,
- space required, and
- type of learning.

The occupational therapist identifies the roles of the people (teacher and students) in terms of resources, recipients of information, and authority. The occupational therapist identifies the type of interaction occurring among the people in the classroom and the type of communication, including

- who is giving the information,
- to whom information is given,
- the purpose of the information,
- the context of communication,
- the words used,
- nonverbal communication noted, and
- the sequence of communication.

Using this type of assessment, the occupational therapist can analyze the performance components of an activity within a classroom or other natural environment, and develop interventions that best fit existing classroom structures and cultures.

Activity analyses provide baseline data, a method of measuring progress toward the objectives of intervention, and a means of documenting progress or regression (Bober, 1987). The time-consuming nature of analyzing activities can be reduced by starting with published standard analyses of common activities of daily living (Talarico and Slusher, 1982), play-based assessments (Abreau, et al., 1994), and local school curriculum objectives. Such standard analyses describe the steps used by most individuals to perform a common activity. The information can be customized to suit the actual environmental demands on a particular student, and the discrepancy between the expected and actual performance can be noted. A collaborative functional assessment, such as OT FACT (Smith, 1994) provides a framework for determining which activities in a student's daily life need detailed analysis and assessment, and when a standardized test of performance components may be useful.

Activity analyses can be used to identify the focus of occupational therapy intervention. Within the framework of OT FACT or the Collaborative Assessment Profile (St. Pierre, 1995), activity analyses help participants developing the student's individualized education plan to decide if direct as well as indirect occupational therapy should be provided and whether intervention should emphasize remediation, prevention, compensation, or a combination of these approaches.

Following is an example of intervention based on the activity analysis technique just described. In this example, the student's individualized education plan calls for "completion of homework and long-term assignments by assigned due dates." The students's occupational therapy supports short-term objectives:

- Maintain an orderly locker, with papers in correct notebooks.
- Bring books, notebooks and assignment book to social studies, math, and science classes each day.
- Bring needed books, notebooks, and assignment book home each night.

The procedure and schedule for measuring progress toward these objectives involves a monthly check of the student's locker and a weekly check of the assignment book by the student's special education teacher, with documentation of observed results. General education teachers and the student's parent(s) check the assignment book daily and provide structure, reminders, and consequences for completed and uncompleted work in class and at home.

An occupational therapy activity analysis shows that the student has difficulty opening the locker, identifying the correct materials in the locker, and maintaining order in the unstructured space. When the weather requires wearing a coat, he has difficulty putting on and removing the coat, which delays him from getting to class and distracts him from remembering to take his materials home.

Indirect intervention by the occupational therapist may include

- gluing sequential pictures of the combination lock in the front of the assignment book as a reminder of how to open it;
- modifying the handle of the locker for easier grip and movement;
- modifying the fasteners on the student's coat to compensate for his motor skills;

- placing a chair near the student's locker to eliminate his need to stand while dressing;
- unobtrusively coding the student's coat sleeves to assist in spatial perception;
- partitioning and color-coding locker space for specific subject materials;
- color coding book covers, notebooks, and folders; and
- developing a brief reminder to check materials against the assignment book and taping it inside the locker door for the student to use in case of distraction.

Direct occupational therapy intervention may include

- practice in putting on and taking off the student's coat (done out of context if the student does not want to do it in front of other students at naturally occurring times) and
- practice opening the locker.

Collaboration with the physical education teacher results in an adapted program that addresses the student's need to improve balance, coordination, and strength. Collaboration with the teacher whose classroom was nearest the student's locker provides a ready source of help before and after school if planned strategies fail. General education teachers allow the student more time at the beginning and end of the day to deal with his coat and his locker and color code assignments to match the materials.

The intervention described above cannot be categorized as strictly motor, perceptual, cognitive, or psychosocial. It centers on performance of an activity in a relevant environment and encompasses several performance areas and performance components. It involves direct and indirect occupational therapy and uses remediation, compensation and prevention. It provides part of the structure the student needs to assume the role of student and to meet educational objectives.

Occupational therapy strategies for students with traumatic brain injuries are similar to strategies for students and adults with other neurological disabilities. Strategies are geared toward achieving competence in performing purposeful activities in natural environments. In school, these activities range from the ability of a preschooler to calm herself in a stressful situation, to a youth preparing for employment. The occupational therapist collaborates with hospital or agency care providers, families, and school staff to assess the student's needs, plan an appropriate program, and implement intervention.

Speech and Language

A traumatic brain injury may affect any aspect of speech, language, or cognition, depending on the type and severity of the injury. Typically, most students recover basic speech and language skills. These intact surface skills of communication sometimes mask significant difficulties with other cognitive processes such as attention, memory, and organization, as well as impairments in pragmatics or the social use of language. Figure 26 provides some of the most common cognitive-communication deficits following a traumatic brain injury.

Speech Deficits

Most students recover adequate speech production even after severe injuries. A small percentage of students may have a significant residual dysarthria, that is, a motor speech disorder caused by muscular weakness, slowness or incoordination caused by damage to the nervous system. Those techniques that a speech-language pathologist would use with any other student with a motor speech disorder are appropriate as long as they are matched to the student's cognitive abilities and capacity for self-monitoring.

Functional communication is always a priority. If speech production abilities (motor speech) are not adequate for the student's cognitive and language skills, an augmentative communication system (for example, a picture or word board), may be developed and implemented as with any other nonspeaking student. For students with traumatic brain injuries, an augmentative system may be a temporary measure while speech intelligibility is improving. Parents and the student may need reassurance that an augmentative system will not prevent the recovery of speech. Since recovery of intelligible speech is so prevalent among people with traumatic brain injuries, an expensive computerized communication system is generally not considered until at least a year past injury.

A small percentage of students will have "vocal fold" weakness or paralysis that will prevent them from speaking with adequate voice volume or from using their breathing efficiently for speech. Other students might have weaknesses in the muscles that prevent air from leaking through the nose during speech, resulting in hypernasality. If vocal-fold paralysis or hypernasality does not respond to treatment or persists for a year past injury, surgical or prosthetic management may be necessary.

Language Deficits

As is the case with motor speech production, most students who had acquired normal language before their injury recover the surface structure of language. That is, they understand most ordinary conversation and speak in grammatical sentences. There is evidence, however, that children who are injured between birth and 31 months, a period of rapid language development, are likely to have specific problems with expressive language (Ewing-Cobbs, Fletcher and Levin, 1986).

The most common language finding in students after traumatic brain injuries is difficulty naming or retrieving words in spontaneous speech (Ewing-Cobbs, Fletcher and Levin, 1986). These problems may manifest themselves in sparse or hesitant output, word substitutions, reformulations, or tangential speech. As the student with a traumatic brain injury grows older, word retrieval problems may be confounded by a failure to learn new vocabulary at a typical rate.

The appearance of "normal" language in nonstressful situation and good performance on standardized tests of language can be deceptive. In a nondistracting test environment in which language skills are tested in isolation, the student may respond well. The same language skills may deteriorate when the cognitive demands of the task increase (for instance, if the student must process information from multiple sources, in a distracting environment, or must respond quickly in a timed task). The speech and language pathologist will generally need to focus assessment and treatment on those language disorders that have their basis in underlying cognitive deficits.

Cognitive-communicative Deficits

Some of the most common cognitive-communicative deficits are listed in Figure 26. Although listed separately, all these cognitive processes interact depending on the task and the deficits can range from mild to severe depending on the nature and extent of the brain injury.

Communication must be evaluated in the student's natural environment, with all its social and cognitive demands, as well as in the test setting. Although standardized, norm-referenced tests have the limitations discussed in Chapter 5, they do have value in assessing the student with a traumatic brain injury. Not only can they identify deficits in specific skills, but most importantly, they can identify strengths. For example, a student with good reading comprehension can use written reminders to compensate for impaired memory. Another value of formal testing is the ability of the speech and language pathologist to learn a lot about the student's attention, concentration, and memory skills by observing the response to testing.

Assessment

In the nondistracting structured test setting, the student may show abilities that are not obvious in the classroom. On the other hand, a student may score poorly on a language test because of an acquired attention disorder rather than a lack of comprehension. The speech and language pathologist and psychologist will want to compare results of their assessments to fill in gaps and develop a comprehensive cognitive-communicative profile for each student.

Students with traumatic brain injuries may score well on tests that elicit or tap pre-injury knowledge, but do poorly on tasks requiring new learning. For example, receptive vocabulary seems to be quite resilient to brain injury except in cases of focal damage to the receptive language areas of the left hemisphere.

A student with a traumatic brain injury may score at age level when first tested on the Peabody Picture Vocabulary Test, but scores may fall below age level over time because the student fails to learn new vocabulary at a typical rate. On the other hand, a student may have extreme difficulty initially with the auditory-visual learning subtest on the Woodcock-Johnson Psychoeducational Battery, but do better in a year as the student's ability to learn improves.

When evaluating the student with a traumatic brain injury, the speech and language pathologist can expect

- a scattered pattern of abilities that is not typical of developmental language disorders,
- well-preserved memory for old knowledge despite poor memory for day-to-day events,
- test results that may have very little resemblance to function outside the testing environment,
- deficits in cognitive and language skills that were not expected before the current developmental stage, and

Figure 26

Common Cognitive-communication Deficits

Deficit	Example of Behavior
Attention, concentration	• easily distracted • overloads quickly • misses parts of instruction • loses place when reading • has difficulty staying on task
Information processing	• unable to follow lengthy or rapid instructions • slow to respond
Sequencing	• tells stories with events out of order • has difficulty following own daily schedule • starts in the middle of a task
Comprehension of abstract language	• has difficulty detecting inferences, double meanings, humor
Word retrieval	• uses vague referents and fillers (such as "um, you know, that thing")
Expressive language organization	• stories lack cohesiveness • rambles, is tangential
Pragmatics	• doesn't read listener cues • has limited repertoire of topics, responses
Problem solving	• can't identify salient features of a problem • solutions may be related but not on target • thinks concretely
Memory	• forgets belongings, assignments • can't store and retrieve new information efficiently • asks same questions every day

- unpredictable recovery of skills in both amount and rate.

For these reasons, frequent reassessments of the student are necessary to follow the student's changing needs and abilities and to modify educational programming accordingly.

Treatment

Remediation of communication skills for the student with a traumatic brain injury almost always incorporates cognitive rehabilitation and uses an interdisciplinary approach that takes place in natural environments whenever possible. Because all educational team members will address some aspect of cognition, they should coordinate their approaches to ensure a clear framework for the student's learning activities.

When planning strategies for cognitive-linguistic intervention (cognitive retraining that emphasizes language skills), all the principles for behavioral intervention, especially prevention and antecedent strategies (see Chapter 7), should guide the implementation of any specific techniques.

Most techniques used to remediate cognitive-language deficits and provide linguistic retraining fall under the following four general treatment

Examples of Treatment Strategies

Attention

- Minimize distractions, then slowly increase them as the student develops tolerance.
- Provide a cue card on the student's desk to remind the student to focus.
- Gradually increase time attending to a task by using a digital timer and having the student work to achieve his "personal best" attention time.

Memory

- Provide a cue card on the student's desk to remind the student of necessary information.
- Provide a memory notebook divided into sections (for example, schedule, "to do" list for assignments, and important information such as people, addresses, and phone numbers).
- Provide an alarm wristwatch to remind the student of an appointment or task.
- Have the student associate new information with something familiar.
- Rehearse verbal or motor activities. Even students with severe memory deficits can learn routines through repetition. Memory exercises don't generalize, so have the student rehearse functional activities only.
- Provide prospective memory training (see Sohlberg, 1989).

Information Processing

- Adjust the amount and rate of stimuli presented.
- Group information verbally or use visual diagrams to help the student.
- Use "alerting" statements (such as, "I want you to listen for X").
- Provide study guide for written information.
- Teach student to request repetitions, additional time, and so forth.

Sequencing

- Have the student give the instuctions of a familiar game.
- Have the student put pictures or written steps in order.
- Have student follow written or pictured steps for an activity. Cross off each one as it is completed.
- Have a student listen to a story and tell what happened first, next, and last.
- Do something in the wrong order and have the student identify the error.

Comprehension of Abstract Language

- Use videotapes of current television shows to practice identifying idioms, humor, figurative language, and to make inferences and draw conclusions.
- Have the student select humorous end to a story from multiple choices.
- Practice analogies and teach idioms and figures of speech.
- Identify ambiguous statements and double meanings.

Word retrieval

- Use opposites, associations, descriptions.
- Teach categorization and semantic mapping.
- Help the student develop scripts.
- Provide "feature analysis" guides.

Expressive Language Organization

- Diagram ideas sequentially or in order of importance, using cognitive mapping.
- Rehearse scripts.
- Develop story schemes.
- Encourage silent rehearsal time before speaking.

Pragmatics

- Teach rules of conversation.
- Initiate or use role playing.
- Analyze conversational interaction from a television show.
- Analyze videotape of student in conversational group.
- Provide structured peer feedback.
- Provide social skills training program.

Problem solving

- Have the student select the best solution from multiple choices.
- Have the student predict consequences of different actions.
- Have the student use problem-solving guide.
- Have the student brainstorm multiple solutions and evaluate them.

approaches. Although described separately, they are frequently combined in practice.

- Component skills training involves remediation of a specific cognitive or language deficit separated from its natural environment. The skill often is practiced in an organized hierarchy of difficulty (for example, following one-, two-, and three-step directions).
- Functional integration involves incorporating specific skills in increasingly natural settings. If a student can follow multistep or linguistically complex directions in the therapy room, can the student do so in the classroom, lunchroom, or gym? The cognitive demands and distractions of each environment must be evaluated and incorporated into the treatment program. This is why a team approach is so important to the student's success.
- Compensatory strategies are useful as interim measures while specific skills are remediated. The student may modify the environment or use memory aids. For example, students with memory deficits may rely on written or pictorial schedules and lists. These devices are extremely helpful as long as they are individually designed to meet the student's abilities and needs. Photographs of teachers, classmates, or the student himself engaged in a particular activity can help the student to anticipate and rehearse names, places and events, as well as travel through the day independently. The "container" (notebook, folder, or such) should be chosen by the student to improve acceptance of the compensatory device.

Experiencing many successes by answering questions such as "Where do you go next?" is important to compensate for experiences of failure. Educational team members can model their own use of appointment books, calendars, class lists, and so forth. These schedules, lists, and memory aids are good tools for practicing understanding and answering questions about who, what, where, and when and for rehearsing important information.

- Metacognitive awareness training promotes individual self-regulation through active goal setting, self-monitoring, and self-assessment. Although students need a certain level of cognition to reflect on what, how, and why they are doing something, beginning to build these skills as early as possible is important. With students who are young or severely impaired, this can be introduced in one of their favorite games. The therapist asks the student to state a goal, predict performance, compare performance to prediction, and revise the goal, predicted performance, or strategy for playing the game. This type of organized problem solving is particularly difficult for students with traumatic brain injuries. Starting with concrete nonacademic tasks and then transferring the technique to school-based tasks is important.

Figure 27 offers some suggested activities or strategies for addressing particular deficits. They should be viewed only as examples because they do not cover the range of severity that can occur in any area. Speech and language pathologists need to modify therapeutic approaches for each student's age and abilities. In practice, techniques are combined to address more than one deficit area or simplified to address an isolated skill component. Speech and language pathologists may modify the techniques to follow the principles described in Chapter 7.

Because communication is not separate from cognition or behavior, many of the suggested techniques overlap traditional disciplines or professional roles. Individual therapy outside the classroom will be necessary for some component skill training or development of individualized compensatory strategies, but functional integration of skills and strategies in the classroom will be the primary emphasis of intervention for students with traumatic brain injuries.

References

Abreu, B., M. Duval, Gerber, D., and W. Wood. "Occupational Performance and the Functional Approach." In *AOTA Self-Study Series: Cognitive Rehabilitation*. Rockville, MD: American Occupational Therapy Association, 1994.

Bundy, A.C., Ed. *A Conceptual Model of Practice for School System Therapists*. Chicago: University of Illinois at Chicago, 1991.

Bober, P.A. "Independent Living Training in Public Schools." *Occupational Therapy Forum*, 2: 22, 1987, pp. 7-11.

Ewing-Cobbs L., J.M. Fletcher, and H.S. Levin. "Neurobehavioral Sequelae Following Head Injury in Children: Educational Implications." *Journal of Head Trauma Rehabilitation* 1(4), 1986, pp. 57-65.

Griswold, L.A. "Ethnographic Analysis: A Study of Classroon Environments." *The American Journal of Occupational Therapy* 48 (1994), pp. 397-402.

Smith, R.O. *Getting Started Manual: OT FACT*. Rockville, MD: American Occupational Therapy Association, 1994.

Sohlberg, M.M., and C.A. Mateer. *Introduction to Cognitive Rehabilitation: Theory and Practice*. New York: Guilford, 1989.

St. Pierre, E.S. *Collaborative Classroom Assessment Profiles*. Chippewa Falls, WI: Cooperative Educational Service Agency 10, 1995.

Talarico, R., and F.H. Slusher. *Taxonomy of Behavioral Objectives for Habilitation of Mentally Handicapped Persons*. Portland, OR: Portland Habilitation Center, Inc., 1982.

Wisconsin Adminstrative Code. Chapter Med 19, Occupational Therapy Medical Examining Board, Madison, WI: 1994.

A Family Affair 9

Her injury to the brain is not visible to me
For the rest of the world it is a hard thing to see
I as her dad have a long road to hoe, but Mom and
I will never let go.

Love, compassion, knowledge will help, I know,
All of us to realize the long way to go.

Sisters and brother get bothered and upset
when Mom and Dad treat her different (sometimes we forget).
We try to avoid making too much fuss,
but oh, how the injury affects all of us...

Love, compassion, knowledge will help, I know,
All of us to realize the long way to go.

Sometimes teachers react with frustration
because this child breaks a class's concentration
The other children also need to learn,
my daughter's action become a major concern.

Love, compassion, knowledge will help, I know,
All of us to realize the long way to go

She wakes up not knowing what the day has
in store
Problems with kids, maybe teachers, or more?
She might have seizure activity again,
and if she falls and hits her head, what then?

Love, compassion, knowledge will help, I know,
All of us realize the long way to go

The doctors, the nurses, the specialists say
This child will teach you something new each day.
The head injury problem will not go away,
So let's work together—recognition's on the way.

Love, compassion, knowledge will help, I know,
All of us realize the long way to go.

You can't know the pain Mom and I have
gone through
but with love, compassion, knowledge
We'll make it! And so will our child!

This poem, adapted from writings by Frank Blaskowski, the father of a child with a brain injury, indicates how pediatric brain injury traumatizes not only the individual child but the entire family. Trauma of this sort forces a series of unanticipated and unwanted changes in family roles, relationships, and expectations, exacting "a large and lasting toll on family members" (Brooks, 1991). It is in this sense, then, that pediatric brain injury is truly a family affair.

Preceding chapters have reviewed the cognitive, behavioral, and physical sequelae (aftereffects) associated with pediatric brain injury. This section provides school personnel with information concerning the family and the psychosocial impacts of traumatic brain injuries. The needs of the family are described and illustrated through a discussion of the key concepts of mobile mourning, perpetual parenthood, and partnership by force. This chapter also offers suggestions for improving the working relationships among student, family, school personnel, and the medical team; empowering the family; and working with the siblings and peers of the child with traumatic brain injury.

New Responsibilities

The first year following injury represents one of the more difficult periods for the family of a child with a traumatic brain injury. This is not surprising when the following four factors are considered:

- Often, external demands on the family's time dramatically increase during this time period. Typically, the first year following a traumatic brain injury involves multiple return visits to the rehabilitation facility, meetings regarding insurance, increased home care responsibilities, and consultations with school staff members. All of these activities consume time and energy and demand careful attention.
- The emotional resources available to the family tend to decrease over this period. The rehabilitation staff members with whom they have worked closely and intimately during hospitalization are no longer available on a daily basis. Offers to help by extended family, friends, and community members gradually become less frequent.
- During this time period, family members often see—for the first time—evidence of the troublesome cognitive and behavioral sequelae associated with the traumatic brain injury. Survival and restoration of physical functions (walking, talking, and so forth) are understandably the primary focus of attention during the acute phase of recovery. This focus often serves to obfuscate or mask the underlying cognitive and behavioral deficits. Further, complex behavioral abnormalities often emerge only as the child leaves the structure of the hospital or rehabilitation center and ventures forth into the community.
- During the first year following trauma, the family begins to accept the fact that the child may be left with permanent impairments. Certainly, for children who have suffered severe injuries, this is a gradual and often painful process. Families may require ongoing assistance, support, and education as both the parents and siblings confront the chronic nature of the child's problems.

Therefore, when suggesting modifications in the child's daily program or routine, educators should realize that even what they consider to be a simple change is not always so simple because so many factors must be considered (see Figure 28). The family also begins the special education process during this critical and challenging first year. Ideally, meetings with the multidisciplinary team and participants who develop the student's individualized education program result in a lasting and effective partnership, one that is both rewarding and productive for the student and family. To facilitate and strengthen this partnership, school personnel will find it useful to consider the following issues identified in the remaining sections of this chapter.

Mobile Mourning

The bond between parent and child evolves over time. This relationship is defined, at any given point, not only by present events, but by past experience and future hopes as well. The impact of a traumatic brain injury is felt at all points along this continuum.

Parents of children with congenital handicaps (for example, cognitive or learning disabilities) have had time to both mourn their loss and revise their expectations for the future. Parents of children with traumatic brain injuries are called upon to cope in a brief period of time with a precipitous decline in their child's abilities and prospects. The parents of students with traumatic brain injuries quickly find themselves thrown into a period of great challenge, turbulence, and uncertainty.

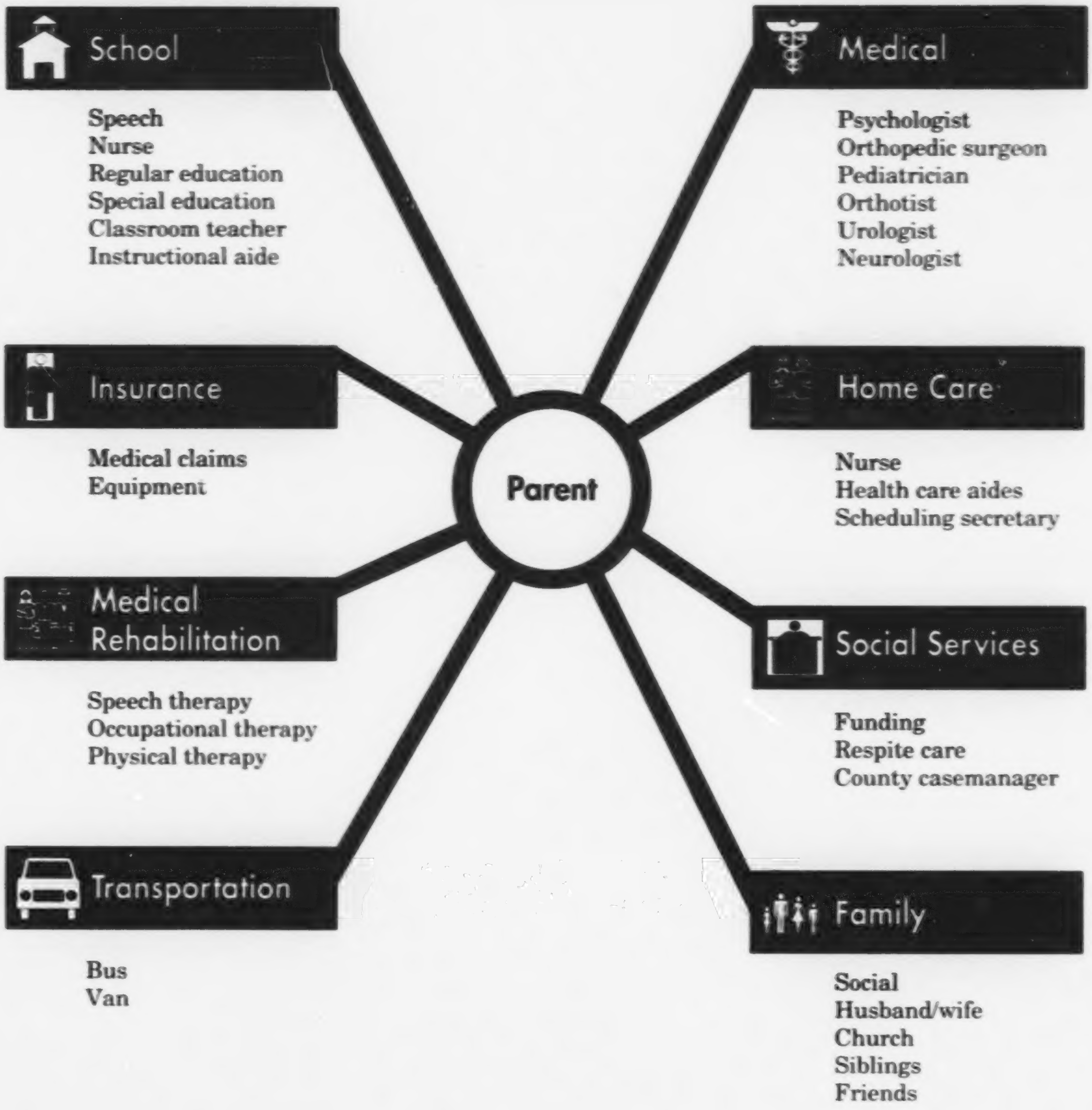
During the initial stages of their work with the families of children with traumatic brain injuries, it is imperative that school staff members recognize that these families most likely are actively in mourning "over the loss of a still living individual" (Lezak, 1978). This concept of mobile mourning (Blosser and DePompei, 1991) implies loss of not only the child as he or she was before the injury, but the loss of the anticipated future of the child as well. Mourning of the child's future continues hand in hand with the growing recognition of the potential for permanent impairment.

The child who is discharged from the medical center following a traumatic brain injury is in many ways a stranger to the family. The family had come to know their child over his or her lifetime before the traumatic brain injury. At the time their child is returned to the community—and to the school district—the family may have had only 30 to 60 days to become familiar with their child as he or she is following the traumatic brain injury.

Family members may no longer be able to use previously successful patterns of interactions. Difficulties with self-regulation, initiation, affective lability, and judgment—all common deficits following severe brain injury—render existing interactional strategies obsolete or ineffectual and often provoke significant levels of strain or conflict within the family system. Parents may become

Figure 28

Coordinating the Child's Needs



Adapted from a diagram by Barbara Rich, parent of a child with traumatic brain injury.

confused and frustrated. Not uncommonly, a sense of hopelessness arises.

Educators who recognize that parents invest many of their own hopes for the future in their children and that a traumatic brain injury often dramatically alters the course of these hopes can facilitate a better relationship with families. The failure to recognize this mobile mourning can seriously disrupt the building of partnerships between school personnel and families.

Perpetual Parenthood

The changes parents see in their child with a traumatic brain injury during hospitalization are truly dramatic, often bewildering, and sometimes frightening. In the intensive care unit they find their child unresponsive or in a coma. By the time of discharge, their child may recognize family members and may begin talking and walking. Medical personnel may tell the family that almost anything is possible during the next year. Parents' hopes are high. It is doubly difficult, then, when the rate of change slows dramatically during the second year following a traumatic brain injury.

Typically, as children grow and their skills increase, they move toward adulthood and independent living. Parents invest in this future and develop expectations and/or dreams about their children as adults. However, children who have suffered moderate to severe brain injuries often fail to achieve the skills necessary for independent learning and living.

The parents of such children are confronted with the unexpected possibility of providing physical and emotional support, guidance, and resources well beyond the time of high school graduation. They must confront the new and difficult reality of perpetual parenthood (Martin, 1988). There may be a need for them to continue to parent their child, perhaps for the rest of that child's life.

Partners by Force

Traumatic brain injury thrusts the family into contact with multiple health care and social services providers. Following the child's discharge from the hospital or rehabilitation facility, the family is thrust into a new relationship with their child's school. Within a period of only weeks, parents have become "partners by force" (McNeny and Wilcox, 1991) first with the hospital-based brain-injury rehabilitation team and subsequently with the school's multidisciplinary team.

Typically, parents come to the initial multidisciplinary team meeting filled with both hope and apprehension. By the time the child is discharged from the hospital, they have long awaited the return to familiar environments and routines. Previous experience has taught them what they can expect from schools. Bells, bus rides, books, and teachers are things they know well. However, they are *not* familiar with multidisciplinary teams, individualized education programs, and case managers. Parents are, in effect, thrown once again into an unfamiliar situation and introduced to yet another group of professionals with whom they have had little, if any, previous contact.

School personnel should realize that families often continue their relationship with the hospital or rehabilitation team long after discharge, even after the child returns to school. Each of these providers (family, rehabilitation, and special education) has a different starting point and each has a unique set of experiences with the child with a traumatic brain injury. Educators must recognize and acknowledge the different perspectives of these providers if they are to succeed in developing an integrated and effective plan to address the child's educational needs.

Empowering the Family

The hospital environment is one in which the family has little or no control. Physicians, nursing staff, and therapists do things to and for the child. Parents may not fully understand the need for many of the procedures.

Upon returning home and to school, once again they are confronted with processes they have had little experience with, and may not fully understand (for example, the process of meeting with a multidisciplinary team and developing an individualized education program). Actively empowering parents at the time of a multidisciplinary team meeting allows the family once again to have a sense of control and participation in their child's life. Cultivating this process of empowerment can greatly reduce the potential for conflict between parents and school personnel.

Families become dependent upon information during the hospitalization period. During the child's first days in the intensive care unit, they learn about intercranial pressure, oxygen saturation, heart rate, and medications. As the child improves, the family may be asked to meet daily or weekly with hospital staff members to discuss such topics as range of motion, swallow studies,

Figure 29

Empowering the Family

- Inform the family daily or weekly about the child's progress.
- Listen when family members talk about their child.
- Acknowledge when, like the family, you "don't know" what to do and need to seek consultation.
- Understand the needs of family members as well as those of the child.
- Simplify communications by using a case manager (see Chapter 3).

magnetic resonance imaging, calorie counts, and scores of other complex issues. All of these are of vital importance to the child's well-being. The information provided serves to reduce the parents' anxieties and to give them a sense of active participation (control) in their child's recovery and treatment.

The family of the child with traumatic brain injury continues to need information about progress and problems following hospital discharge and return to school. Taking steps to regularly (daily or weekly) provide the family with information about the child's progress, behavior, and program reduces their anxieties.

Educators who listen as well as talk can provide the family with a sense of involvement, constructive partnership, and assurance. Educators must remember that parents know their child best.

Families usually approach school re-entry expecting that school personnel will know what to do. They believe that once the child returns to school everything will be all right. In many cases, however, it soon becomes apparent that there are no specialized classrooms for students with traumatic brain injuries. Teachers sometimes acknowledge that they have never worked with a child with a traumatic brain injury. Sometimes, parents are then left with the feeling that their child has come so far, only to find that the school cannot or will not provide the resources required to promote further recovery.

Experiences of this sort increase the potential for conflict between parents and school staff members. To protect their working relationship with parents, school personnel must accurately represent the resources available within the school setting, feel free to openly discuss their previous experience with children with traumatic brain injuries and their level of expertise, and be willing to seek consultations from other educators and medical and rehabilitation personnel with specialized training in this area.

Several research projects have investigated the needs expressed by the families of children with traumatic brain injuries across a range of socioeconomic levels (Waaland, Burns and Cockrell, 1993; Marx, et al., 1993). These studies suggest similar needs regardless of income level. For school personnel, the implications of these findings are clear. Parents express a strong need to be partners and to have staff members respect their opinions and their child's wishes. When asked whether understanding from family and friends or understanding from teachers and therapists was more important, parents indicated that understanding from teachers and therapists was more important.

Siblings

Traumatic brain injury also exerts a major impact upon siblings of the child who is injured. In the early phases of recovery, parental energy, love, and concern are focused upon the child in the hospital, while the siblings' needs are invariably "put on the back burner" (Sellars and Vegter, 1993). Frequently siblings are placed with relatives as their parents remain at the bedside of the injured child.

During their own visits to the hospital, siblings experience a range of unpleasant, confusing, and potentially frightening events. They may find their brother or sister unresponsive, distractible and disinterested, or dependent upon machines and tubes for survival. Their parents may seem fatigued or distant. They may see, for the first time, their parents crying or frightened.

While all of this is occurring, siblings are expected to keep up with their homework, behave, and set aside their own needs. Juggling personal needs, which is problematic for an adult, frequently is impossible for a child.

Older siblings may be able to understand and cope with events during the acute phase of recovery. Younger siblings, however, often feel a sense of abandonment as relatives and extended family members care for them.

During the acute hospitalization period, it is critically important that school personnel are aware of the potential impact upon the siblings' psychosocial as well as academic functioning. Beyond the acute phase, siblings are vulnerable to a series of psychological risks on a protracted basis. They may experience feelings of guilt about the circumstances of the accident, feelings of abandonment (Savage and Wolcott, 1994), or newly emerging negative feelings about the brother or sister with traumatic brain injury.

Certainly, many siblings experience a sense of jealousy over the time their parents devote to caring for the child who is injured both during the hospitalization and following discharge. Frequent return trips to the rehabilitation center during a span of many months compound the problem, as do the attention, gifts, and special treatment given to the child who is injured during this protracted period. At school, siblings are frequently asked about their brother or sister, not about how they themselves are doing.

After a brain injury to a child, siblings who are inherently dependent upon their parents suddenly may find their parents depending on them. Fatigue and the increased demands on their time often force parents to ask siblings to participate in the daily care of the child with a traumatic brain injury. The unaffected sibling may be embarrassed and frustrated by the physical appearance, poor judgment, or emotional lability of the brother or sister with a traumatic brain injury.

Depending upon their age, siblings may or may not have the emotional maturity or verbal skills to express their feelings. The family, while actively engaged in the mourning process, is forced into a series of new partnerships and may be struggling with the specter of perpetual parenthood. The parents must contend also with the potential for increasing conflict between siblings, striving to achieve a balance that ensures that the needs of all family members are met. Once again, school staff members can greatly assist the sibling who is learning how to express his or her feelings and needs in an appropriate way and at an appropriate time.

Certainly "the uninjured sibling can be a potent source of help and support for the patient. They can also be a target for clinical intervention. It is the responsibility of the rehabilitation team (and the school) to insure that the former happens, and not the latter" (Brooks, 1991).

Peers

The loss of friends is the single most common experience of students who have suffered moderate to severe brain injury. Peers tend to expect an instant return to pre-injury activities and social relationships following a friend's discharge from the hospital. If they are left unprepared for the immature or disinhibited behavior of their friend with traumatic brain injury, social relationships may end abruptly (Savage and Wolcott, 1994).

Increasing the quality, as well as the quantity, of social experiences should be one of the goals in the individualized education program of a student who has suffered a traumatic brain injury. This goal will necessarily involve not only the student, family members, and school personnel, but the student's peers as well.

Traditionally, education focuses primarily on competency in academic skills. In the last two decades, however, this traditional role has expanded into a multidimensional focus due to mandates associated with Section 504 of the Rehabilitation Act of 1973 and the Individuals with Disabilities Education Act (IDEA).

As a traumatic brain injury leads to acute and unexpected changes in cognition, behavior, and psychosocial functioning, schools need to expand beyond their traditional focus on academics and include programming for those skills required in daily living situations. The ability to initiate and maintain peer relationships is one of these skills.

If the parents of the student with traumatic brain injury permit, school staff members should educate peers about the behavioral changes they may see in their friend returning to school (Raines and Waaland). Before the child is discharged from the hospital, the use of videotaped messages between hospital and classroom can help initiate a smooth transition from hospital to classroom.

Classmates often benefit from practical suggestions about how they can support and enhance the student's outcome. Similarly, peers may benefit from formal instruction about the sequelae of traumatic brain injuries and from regular sessions with a guidance counselor or school psychologist.

Most people have faced a situation in which someone has told a joke and everyone understood it but them. The child with a traumatic brain injury often is left in that same position due to a very literal interpretation of language, subtle language problems, or a slowness in processing information.

The poor judgment, failure to understand subtle social cues, impulsiveness, and concreteness of their friend with traumatic brain injury represent a significant threat to friendships. This may be especially true as physical recovery continues and the outward signs of the brain injury diminish (Savage and Wolcott, 1994).

It is clear that the patterns of friendships change and that the child with a brain injury eventually becomes socially isolated. This isolation may be unwittingly reinforced by the many accommodations made for the student with traumatic brain injury. For example, his or her exclusion from physical education programs or the presence of an aide may keep peers away from the student with a traumatic brain injury or deny him or her access to natural environments in which social relationships are formed. The school and family must, therefore, carefully assess potential benefits and risks associated with each of the recommended goals and accommodations.

The relationship between a student with traumatic brain injury and peers may not have been a direct concern of school staff members prior to injury. Following the traumatic brain injury, however, the involvement of classmates and friends is a necessary and an essential part of school re-entry. In addition to academic progress, the quality of the student's social relationships deserves consideration by multidisciplinary teams and individualized education program participants.

References

Blosser, Jean L., and Roberta DePompei. "Families of Children with Traumatic Brain Injury as Advocates in School Re-Entry." *Neurorehabilitation* 1 (1991), pp. 29-37.

Brooks, Neil D. "The Head Injured Family." *Journal of Clinical and Experimental Neuropsychology* 13 (1991), pp. 155-188.

Lezak, M. "Living with a Characterollogically Brain Injured Patient." *Journal of Clinical Psychology* 39 (1978), pp. 592-598.

Martin, Darlene A. "Children and Adolescents with Traumatic Brain Injury: Impact on the Family." *Journal of Learning Disabilities* 21 (1988), pp. 464-470.

Marx, Michelle, et al. "An Examination of the Needs of Families with a Brain Injured Child." *Neurorehabilitation* 3.3 (1993), pp. 1-12.

McNeny, Robin, and Pat Wilcox. "Partners by Force: The Family and the Rehabilitation Team." *Neurorehabilitation* 1 (1991), pp. 7-17.

Raines, Shanan, and Pamela Waaland. *For Kids Only: A Guide to Brain Injury*. Richmond, VA: Medical College of Virginia.

Savage, R.C., and G.F. Wolcott. *Educational Dimensions of Acquired Brain Injury*. Austin, TX: Pro-Ed, 1994.

Sellars, C.W., and C.H. Vegter. *Pediatric Brain Injury: A Practical Resource*. Tucson, AZ: Communication Skill Builders, 1993.

Waaland, Pamela K., C. Burns, and J. Cockrell. "Evaluation of Needs of High- and Low-Income Families Following Traumatic Brain Injury." *Brain Injury* 7 (1993), pp. 135-146.

Preventing Injuries 10

The devastating physical and psychosocial consequences of traumatic brain injury create significant challenges for the health care system. Despite the staggering statistics detailing the morbidity and mortality from traumatic brain injuries, most people are unaware of the lifelong consequences, or costs, of such injuries. Generally, people also are unaware of the risks and how to reduce some of the risks, thereby preventing brain injuries.

Brain injuries are among the most costly and preventable injuries among young persons. Estimated lifetime costs can exceed $4 million per person. The total lifetime cost of head injuries sustained in 1985 was estimated at $37.8 billion. Annually, more than $1 billion is spent for direct costs of treating the pediatric brain-injured population; with indirect costs (such as lost wages) that amount is multiplied (Silver, Yudofsky and Hales, 1992).

Assessing Risks

Certain factors contribute to the amount of risk that exists for an individual child. Age is one of those factors. In 1993 the Research and Training Center in Rehabilitation and Childhood Trauma (RTCRCT) reported that among children from birth to age 18, 29 percent of injuries occur to children ages 5 to 9 years; 25 percent to children ages 1 to 4; 24 percent to ages 10 to 14; and 17 percent to ages 15 to 19. Several other factors have been identified (Oddy, 1993).

- Boys are at greater risk than girls throughout childhood. The ratio is 7:5 to age 4, increasing to 3:1 by late adolescence.
- Brain injuries occur more frequently in the summer, during evenings, and on weekends.
- People suffering brain injuries often have some kind of prior social, personality, or learning disturbance (for example, a learning disability).

The RTCRCT also reported that the major causes of injuries were falls (26 percent), riding in a motor vehicle (19 percent), miscellaneous (19 percent), and being struck by a motor vehicle (16 percent). The miscellaneous category includes injuries resulting from being beaten, struck by an object, bitten by an animal, and injuries from sports or related activities.

The causes of injuries differ also, most notably by age. In the first three years of life, accidents in the home are a common cause. Falls account for more than 50 percent of head injuries below the age of 5. Road accidents start to be a significant problem at 3 years of age; many of these are pedestrian or bicycle "accidents." Teenagers are most apt to suffer brain injuries from vehicle-related trauma (Oddy, 1993).

Most often, children fall from furniture (changing tables, chairs, or cribs) or down stairs. Toddlers beginning to explore their world more frequently fall from heights such as balconies, stairways, porches, or windows. Nearly 20 percent of children treated after falls had fallen 8 feet or more (RTCRCT, 1993).

Among children of school age, motor vehicle accidents in which children are either passengers or pedestrians cause most of the severe injuries. Children between the ages of 6 and 12 are involved in twice as many pedestrian and motor vehicle crashes as younger children.

Identifying Remedies

Most brain injuries result from accidents. Many accidents, however, result from impulsive and thrill-seeking behaviors that predispose individuals to accidents. Because such behaviors are avoidable, teaching that most brain injuries are caused by accidents is inaccurate.

Prevention is the only true cure for traumatic brain injury. Schools can promote prevention in two ways: supervising school activities and educating students about risky behaviors.

Supervising Activities

As noted in the section about risks, falls are the primary source of head injury in children under age 15 (Rivara and Mueller, 1986). Three out of four injuries to children between ages 1 and 4 involve falls from playground equipment. Children should be taught safe behavior on the playground and adequately supervised to minimize horseplay. Playground equipment should be safe and developmentally appropriate for the age group using it. Besides safeguarding against improper use of equipment, other factors that will minimize risk are providing adequate protective equipment, insuring proper placement of equipment, and maintaining proper condition of equipment (Office of the Lieutenant Governor, 1990).

Requiring and regulating the use of helmets can be of vital importance in reducing the incidence of sports-related injuries. Protective head gear must be properly fitted and maintained (this requires discarding equipment that is worn out).

Supervising sports means responding to injuries. Mild brain injuries in sports are most often referred to as concussions. While there is no universal agreement on the definition of a concussion, it is recommended, especially for athletic purposes, that concussion be considered "a traumatically induced alteration of mental status" (Bailes, 1994).

Especially if repeated within a brief time period, concussions may cause headaches, visual disturbances, vertigo, and other symptoms typical of minor head injury. However, permanent neurophysical, cognitive, and behavioral changes also are possible. The athlete who has previously suffered a concussion is four times as likely to sustain another minor brain injury. Therefore the National Athletic Trainers Association has issued guidelines for "return to play" based upon such factors as the grade of concussive injury and the number and grade of previous brain injuries. Figure 30 provides guidelines for assessing the grade of concussion. Figure 31 provides guidelines for determining the proper response.

After an athlete suffers any kind of concussive injury, caretakers should look for neurological deterioration. A "lucid interval" with an apparently clear mental state can be followed by serious, sometimes fatal, brain hematomas. Given the competitive nature of sports, athletes may attempt to deny or hide the existence of an injury in order to continue participating in the activity.

Fatal cerebral swelling may occur following a second minor brain injury (concussion) in athletes who still are symptomatic from the first injury. This phenomenon is the "second-impact" syndrome. The individual who develops a second-impact syndrome has rapid pupil dilation, loss of body movement, and respiratory failure.

When initially evaluating a student for a concussion, school personnel will benefit from information, support, and reassurance from a healthcare provider. If the injured individual and her or his family members are taught what complications to watch for following a mild traumatic brain

Figure 30 ■

Assessing Concussions

Severity	Grade	Symptoms
Mild	1	Confusion, loss of orientation; no loss of consciousness
Moderate	2	Amnesia; loss of consciousness for less than five minutes; post-traumatic amnesia that lasts more than 30 minutes but less than 24 hours
Severe	3	Loss of consciousness greater than five minutes; post-traumatic amnesia lasts longer than 24 hours

Figure 31

Return to Play Guidelines

Grade of Concussion and Number this Season	Symptoms	Recovery Time
Grade 1 Concussion		
First	Asymptomatic at rest and upon exertion; no evidence of retrograde amnesia.	After observation "on the bench," return to contest may be permissable.
First	Retrograde amnesia; neurophysical symptoms such as headache, lightheadedness or problems with balance.	Remove the player from play. If the player is asymptomatic at rest and upon exertion for one week, return to play may be as soon as one week.
Second		The player should not return to play for at least two weeks if asymptomatic at rest and upon exertion for the last seven days.
Grade 2 Concussion		
First		The player may return to play within two weeks if asymptomatic at rest and upon exertion for the prior seven days.
Second		The player should not return to play for at least one month at minimum and terminating future play for that season should be considered.
Third		The player's season should be terminated. If the player suffers three Grade 2 concussions per year or over several seasons, he or she should deliberate whether to participate in contact or collision sports. Abnormalities caused by trauma (evident in a CAT scan or MRI) should preclude future participation in contact or collision sports.
Grade 3 Concussion		
First		The player should not return to competition for at least one month. May return to play if asymptomatic at rest and upon exertion for the last seven days.
Second		The player's season should be terminated.
Third		The player should reconsider whether to participate in any contact or collision sports.

injury, appropriate treatment can be obtained in a timely manner.

The risk of poor outcomes is lessened when all involved (athlete, coach, and parents) understand when it is safe for the player to resume competition following a brain injury.

If she or he did not do so after the first concussion, an individual suffering a second concussion should thoroughly review the circumstances resulting in the injury. The review might include viewing a videotape, if available, and assessing the equipment used by the player. A study of the football helmets of 422 Wisconsin high school football players using seven measurement critieria found two or more fitting errors in almost half (47 percent) of the helmets (Landry, 1994).

According to NATA recommendations, an athlete who has intracranial surgery for removal of a blood clot or has developed posttraumatic hydrocephalus should not be allowed to return to contact or collision sports. Each child's health care provider determines when that individual can return to play.

Educating Young People

Educators also can educate young people about the risks of various nonschool activities. As noted in the section on risks, the amount of risk varies with certain factors. At the same time, the need for education varies with the existence of certain factors.

People who already have sustained a traumatic brain injury vitally need to understand and reduce the amount of risk, because statistically, persons who have had one brain injury are four times as likely to have a second injury. After having a second brain injury, the chance of having a third increases by eightfold (Levin, 1994).

As noted in the section on risks, injuries most often results from falls, riding in a motor vehicle, miscellaneous activities, and being struck by a motor vehicle. Supervising young children and childproofing environments can do much to prevent falls. The section on risks lists common problems areas. The following sections offer tips for avoiding injuries from motor vehicles and miscellaneous activities.

Motor Vehicles

Each year in the United States, more than 1,400 children younger than 13 die as passengers in motor vehicle accidents. More than 90 percent of these children were not using car seat restraints. Child safety seats are proven to be 80 percent to 90 percent effective in preventing injuries to children in motor vehicle crashes. In fact, children younger than four who are not restrained in safety seats are 11 times more likely to be killed in motor vehicle accidents (Silver, Yudofsky and Hales, 1992).

With proper restraints, about 90 percent of motor vehicle fatalities could be prevented. This translates to about 12,000 to 15,000 lives saved yearly (Silver, Yudofsky and Hales, 1992). In Wisconsin, persons who sustained head injuries in motor vehicle accidents were not wearing seatbelts in 82 percent of the accidents. It has been estimated that from 20 to 70 percent of serious childhood head injuries and 40 to 90 percent of child fatalities could be avoided with the use of child restraint seats (Silver, Yudofsky and Hales, 1992).

Motorcyclists and snowmobilers who do not wear helmets significantly increase their risk of brain injury if they have an accident. In a study of motorcycle crashes, failure to wear a helmet was found the single most important determinant of head injury (McLoughlin and McGuire, 1991). In Wisconsin, one study found that motorcycle riders who sustained brain injuries were not wearing helmets in 81 percent of the accidents. Helmets can reduce the risk of on-highway motorcycle fatalities by 25 percent to 28 percent (Silver, Yudofsky and Hales, 1992).

Three- or four-wheel motorized vehicles known as all-terrain vehicles (ATVs), designed for off-road operation by a single person, are known to place riders at particular risk. In 1984, it was estimated that about 67,000 ATV-related injuries were treated in emergency rooms in the United States (Teret and Jagger, 1991). As ATV sales have increased, so has the incidence of death and serious injuries, often to children. These injuries often involve the head and spinal cord. (Teret and Jagger, 1991).

Although 93 percent of children ages 6 to 16 ride a bicycle in the United States, only about one to five percent of these children wear bicycle helmets (Dean Medical Center, 1990; Max, 1991). Nationwide, three out of every four bicyclist deaths are due to head injury (Office of the Lieutenant Governor, 1990).

Wisconsin experiences approximately 21,000 bicycle injuries annually. Bicycle safety helmets are particularly important for children since they suffer the majority of serious head injuries from bicycling (Office of Lieutenant Governor, 1990).

Nearly 70 percent of bicyclist deaths involve brain injuries (Dean Medical Center, 1990).

Children who ride on bicycle-mounted child seats are highly subject to brain injuries if they are not wearing helmets or restraints. For example, when a bicyclist wears a helmet, he or she is 85 percent less likely to have a brain injury (Thompson, et al., 1989).

Because most serious injuries occur when the bicyclist is hit by a motor vehicle, prevention may include setting limits on where children may ride, depending on their age and maturity. Adult supervision usually is advised for children younger than seven years of age who ride bicycles.

When getting on their first bicycle (or tricycle), children should be taught to wear helmets on every ride. Although many manufacturers make bike helmets, only those approved by the American National Standards Institute (ANSI) or Snell Memorial Foundation are recommended. Children should be taught safety rules, including calling home for a ride if necessary, as well as the rules of the road (including riding with traffic, stopping and looking both ways before entering the street, and using appropriate hand signals).

In terms of prevention, bicyclists should be made aware of common causes for fatal bicycle crashes, such as bicyclists making unexpected left turns or swerving into the path of an overtaking motorist, colliding with a motorist in an intersection after failing to stop for a stop sign, and colliding with a motorist after failing to stop and yield when exiting a residential driveway or alley (Office of the Lieutenant Governor, 1990). In addition, since motorists colliding with unobserved bicyclists account for a high frequency of bicycle fatalities (Office of Lieutenant Governor, 1990), bicyclists should be aware of the increased risk of accidents during hours of darkness.

Maintaining bikes in good condition is also critical for safety and prevention of injuries. Adults regularly should check tires, brakes, and seat and handlebar height as well as appropriate helmet fit and use. Some communities sponsor bicycle safety events (for example, bicycle "rodeos") that provide important bicycle safety education and professional consultation.

Miscellaneous

Firearms have been estimated to cause 14 percent of fatal brain injuries in the United States (Wintemute, 1991). Among young children, firearm injuries including brain injuries frequently result from inadvertent firings. For children younger than eight, most unintentional firearm injuries are self-inflicted. Shootings in older children are more often by another child (Wintemute, 1991). Unintentional firearm injuries in children could be reduced by modifying firearms to prevent inadvertent firing (for example, gun locks and gun vaults), by helping children and adults to distinguish more easily between toy guns and real guns, or by removing firearms entirely from the home.

More and more people participate in athletics in this country every year. In secondary schools alone, more than six million students participate in interscholastic sports programs. As an unfortunate consequence, the number of sports-related injuries has grown. More than 1.3 million student athletes will suffer some sort of injury every year (NATA, 1994). In turn, the need for preventing injuries is greater than ever.

The incidence and severity of brain injury varies based upon the activity involved. In terms of recreational athletic activities, brain injuries occur at one of the highest rates from collisions (often at high rates of speed) in downhill skiing. Brain injury is the leading cause of fatality at most large downhill skiing resorts. Most other recreational sports have only sporadic brain injury, cycling being an important exception.

Equestrian sports, boxing, rugby, soccer, football, bicycling, and auto racing—in that order—hold the greatest potential for significant head injury. Other sports with a high risk for brain injury include ice hockey, martial arts, wrestling, motorcycle racing, sports diving, and snow skiing (NATA, 1994).

Although brain injury is unusual from diving mishaps, diving into water that is too shallow can result in concussive injury, spinal cord injury, or near drowning. This type of injury generally can be prevented by teaching young people to check the depth of the water or to first jump feet first ("feet first the first time").

It should also be noted that some studies show that more than 65 percent of patients hospitalized with brain injuries have elevated blood alcohol levels. Several studies also suggest that head injuries and fractures are the two most common alcohol-related types of trauma (Jernigan, 1991).

A study in Wisconsin found that 46 percent of high school seniors had driven a vehicle after drinking and 70 percent had driven with someone who had been drinking. In the United States, an average of 25 teenagers die daily from alcohol related motor vehicle accidents (Wisconsin Department of Public Instruction, 1993).

Clearly, educators can help prevent brain injuries by encouraging young people to

- use seatbelts in motor vehicles;
- use helmets when participating in contact sports, biking, motorcycling, and horseback riding; and
- avoid alcohol and excessive speed when operating a motor vehicle and in other situations in which judgment is critical.

Summary

Unfortunately, many people are unaware of the devastation that can result from brain injury and of the importance of prevention in reducing brain injury. Clearly, much still needs to be done to prevent brain injury.

Indeed, more and more programs are directed toward educating people about the need for prevention. For example, protective headgear is now required for many organized events such as auto racing, bicycling, football, harness racing, ice hockey, motorcycle racing and riding (in some states), power boat racing, horseback riding, and skiing.

Educators can help reduce the incidence of injuries by teaching about injury prevention. One training curriculum for kindergartners through sixth graders is Preventing Injury: A Safety Curriculum (University of Alabama, 1992). Another program for children, The Head Smart Schools Program developed by the University of Virginia and the National Head Injury Foundation, provides lesson plans and activities designed to increase safety (Perrin, 1994). Activities include

- a safety scavenger hunt to identify unsafe places in and around the school setting;
- identifying occupations that pose a high risk for brain injury;
- discussing the role of helmets in preventing injury;
- discussing the economic impact of a brain injury (for example, medical bills and loss of income);
- creating music, poetry, and songs related to safety;
- using injury statistics or graphs to solve problems;
- developing a safety fair;
- identifying violence in movies, cartoons, and sports; and
- creating a sporting event for the 21st century that involves teamwork without violence.

Several organizations sponsor programs schools can present to help to reduce the incidence of injuries by integrating injury awareness with prevention training: University of Wisconsin Hospital and Clinics, Department of Rehabilitation Medicine, and KARE TV; Saint Joseph's Hospital, Marshfield, Wisconsin; the Think First Foundation, 22 S. Washington St., Park Ridge, Illinois, 60068; and Dean Clinic, Madison, WI.

Some programs provide students with direct exposure to the consequences of preventable injuries by bringing survivors of trauma into the classroom. Survivors of brain injury can draw on their life experiences to make an important contribution with regard to injury prevention. Life experience permits survivors of serious injury to speak with authority about injury and prevention.

As more coaches and athletes become aware of potential causes of brain injury, increased safety will result in fewer injuries. For example, when it was clearly shown that the use of the head as a battering ram in tackling was the cause of most serious head and neck injuries in professional football, the tactic was made illegal in the 1976 rule changes, resulting in reduced incidence of serious head and neck injuries on the football field (Cantu, 1994).

Finally, because of their training and dedication to injury prevention and their close proximity to events involving injury, athletic trainers and coaches are critical in injury prevention efforts. Coaches and trainers can provide vital information about improved conditioning and the dangers of brain injury.

References

Bailes, J. "Head Injury in Athletes." In *Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC: National Athletic Trainers' Association Research and Education Foundation, April 16-18, 1994, pp. 6-12.

Cantu, R. "Minor Head Injuries in Sports." In *Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC: National Athletic Trainers' Association Research and Education Foundation, April 16-18, 1994, pp. 17-30.

Dean Medical Center. "Crash Helmet: Teaching Important Lessons in a Gentle Manner." In *Caring for You.* Madison, WI: Dean Medical Center, July 1990.

Hough, D. "Mild Brain Injury in Sports." In *Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC: National Athletic Trainers' Association Research and Education Foundation, April 16-18, 1994, pp. 31-41.

Jernigan, D. "Alcohol and Head Trauma: Strategies for Prevention." *Journal of Head Trauma Rehabilitation* 6(2), June 1991, pp. 48-59.

Landry, G. "Mild Brain Injury in Athletes." In *Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC: National Athletic Trainers' Association Research and Education Foundation, April 16-18, 1994, pp. 47-52.

Levin, H. Position Paper on Mild Brain Injury. In *Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC: National Athletic Trainers' Association Research and Education Foundation, April 16-18, 1994, pp. 53-61.

Max, W., E. MacKenzie, and D. Rice. "Head Injuries: Costs and Consequences." *Journal of Head Trauma Rehabilitation* 6(2), June 1991, pp. 76-91.

The May Center. *Myths, Facts and Figures about Childhood Brain Injuries* 3, Randolph, MA.

McLoughlin, E., and A. McGuire. "Preface." *Journal of Head Trauma Rehabilitation* 6(2), June 1991, pp. vii-viii.

National Athletic Trainers' Association. Proceedings from the "Mild Brain Injury in Sports" Summit. Washington, DC, April 16-18, 1994.

Oddy, M. "Head Injury During Childhood." *Neuropsychological Rehabilitation* 3(4), 1993, pp. 301-340.

Office of Lieutenant Governor. The Report of the Lieutenant Governor's Trauma and Injury Prevention (TIP) Task Force for Wisconsin's Children. Madison, WI: 1990.

Perrin, D. Position Paper. In *Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC: National Athletic Trainers' Association Research and Education Foundation, April 16-18, 1994, pp. 81-86.

Research and Training Center in Rehabilitation and Childhood Trauma. "Facts from the National Pediatric Trauma Registry." Dept. of Rehabilitation Medicine, Tufts University School of Medicine New England Medical Center, October 1993.

Rivara, F., and B. Mueller. "The Epidemiology and Prevention of Pediatric Head Injury. In *The Journal of Head Trauma Rehabilitation* 1(4), December 1986, pp. 7-15.

Silver, J., Yudofsky, S., and R. Hales, Eds. *The American Psychiatric Press Textbook of Neuropsychiatry.* 2nd ed. Washington D.C.: American Psychiatric Press, 1992.

Teret, S., and J. Jagger. "All Terrain Vehicles: A Case Study in Law and the Prevention of Injuries." *Journal of Head Trauma Rehabilitation* 6(2), June 1991, pp. 60-70.

Thompson, R.S., F.P. Rivara, and D.C. Thompson. "A Case Control Study of the Effectiveness of Bicycle Safety Helmets." In *New England Journal of Medicine* 320(21), 1989, pp. 1361-1367.

Wintemute, G., and J. Sloan. "Head Injury By Firearm: Epidemiology, Clinical Course and Options for Prevention." *Journal of Head Trauma Rehabilitation* 6(2), June 1991, pp. 38-47.

Wisconsin Department of Public Instruction. *The Wisconsin Study: Alcohol and Other Drug Use.* Madison, WI: April, 1993.

Appendixes

11

A. *Federal Legislation*

B. *Measures of Consciousness*

C. *Policy Bulletins, Exceptional Education*

D. *Wisconsin Administrative Codes*

E. *Parent Preparation for IEP Meetings*

Federal Legislation

Traumatic Brain Injury

(Authority 20 USC 1401 (a)(1))
300.7 Traumatic Brain Injury
"Traumatic brain injury" means an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual and motor abilities; psychosocial behavior; physical functions; information processing; and brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma.

Assistive Technology

(Authority 20 U.S.C. 1401(a)(25))

300.6 Assistive Technology Service

As used in this part, "assistive technology service" means any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. The term includes

(a) The evaluation of the needs of a child with a disability, including a functional evaluation of the child in the child's customary environment;

(b) Purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by children with disabilities;

(c) Selecting, designing, filling, customizing, adapting, applying, retaining, repairing, or replacing assistive technology devices;

(d) Coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;

(e) Training or technical assistance for a child with a disability or, if appropriate, that child's family; and

(f) Training or technical assistance for professionals (including individuals providing education or rehabilitation services), employers, or other individuals who provide services to, employ, or are otherwise substantially involved in the major life functions of children with disabilities.

Measures of Consciousness

Glasgow Coma Scale

Eye Opening (E)	
Spontaneous	4
To speech	3
To pain	2
No response	1

Best Motor Response (M)	
Follows commands	6
Localization of pain	5
Withdrawal from pain	4
Flexion to pain	3
Extension to pain	2
No response	1

Verbal Response (V)	
Oriented	5
Confused conversation	4
Inappropriate words	3
Incomprehensible sounds	2
No response	1

Coma Score = E + M + V

Reprinted with permission from "Assessment of Coma and Impaired Consciousness: A Practical Scale" by G. Teasdale and B. Jennett in *Lancet* II (1974), pp. 81-84.

Rancho Los Amigos Cognitive Scales

Infants—6 Months to 2 Years

Level I: Interacts with Environment

a) Shows active interest in toys; manipulates or examines before mouthing or discarding.
b) Watches other children at play; may move toward them purposefully.
c) Initiates social contacts with adults; enjoys socializing.
d) Shows active interest in bottle.
e) Reaches or moves toward person or object.

Level II: Demonstrates Awareness of Environment

a) Responds to name.
b) Recognizes mother or other family members.
c) Enjoys imitative vocal play.
d) Giggles or smiles when talked to or played with.
e) Fussing is quieted by soft voice or touch.

Level III: Gives Localized Response to Sensory Stimuli

a) Blinks when strong light crosses field of vision.
b) Follows moving object passed within visual field.
c) Turns toward or away from loud sound.
d) Gives localized response to painful stimuli.

Level IV: Gives Generalized Response to Sensory Stimuli

a) Gives generalized startle to loud sound.
b) Responds to repeated auditory stimulation with increased or decreased activity.
c) Gives generalized reflex response to painful stimuli.

Level V: No Response to Stimuli.

a) Complete absence of observable change in behavior to visual, auditory or painful stimuli.

Preschool—2 to 5 Years

Level I: Oriented to Self and Surroundings
- a) Provides accurate information about self.
- b) Knows she or he is away from home.
- c) Knows where toys, clothes, and such are kept.
- d) Actively participates in treatment program.
- e) Recognizes own room, knows way to bathroom, nursing station, and other destinations.
- f) Is potty trained.
- g) Initiates social contact with adult. Enjoys socializing.

Level II: Is Responsive to Environment
- a) Follows simple commands.
- b) Refuses to follow commands by shaking head or saying "no."
- c) Imitates examiner's gestures or facial expressions.
- d) Responds to name.
- e) Recognizes mother or other family members.
- f) Enjoys imitative vocal play.

Level III: Gives Localized Response to Sensory Stimuli
- a) Blinks when strong light crosses field of vision.
- b) Follows moving object passed within visual field.
- c) Turns toward or away from loud sound.
- d) Gives localized response to painful stimuli.

Level IV: Gives Generalized Response to Sensory Stimuli
- a) Gives generalized startle to loud sound.
- b) Responds to repeated auditory stimulation with increased or decreased activity.
- c) Gives generalized reflex response to painful stimuli.

Level V: No Response to Stimuli
- a) Complete absence of observable change in behavior to visual, auditory, or painful stimuli.

School Age—5 Years and Older

Level I: Oriented to Time and Place; Is Recording Ongoing Events
- a) Can provide accurate, detailed information about self and present situation.
- b) Knows way to and from daily activities.
- c) Knows sequence of daily routine.
- d) Knows way to unit; recognizes own room.
- e) Can find own bed; knows where personal belongings are kept.
- f) Is bowel and bladder trained.

Level II: Responsive to Environment
- a) Follows simple verbal or gestured requests.
- b) Initiates purposeful activity.
- c) Actively participates in therapy program.
- d) Refuses to follow request by shaking head or saying "no."
- e) Imitates examiner's gestures or facial expressions.

Level III: Gives Localized Response to Sensory Stimuli
- a) Blinks when strong light crosses field of vision.
- b) Follows moving objects passes within visual field.
- c) Turns toward or away from loud sound.
- d) Gives localized response to painful stimuli.

Level IV: Gives Generalized Response to Sensory Stimuli
- a) Gives generalized startle to loud sound.
- b) Responds to repeated auditory stimulation with increased or decreased activity.
- c) Gives generalized reflex response to painful stimuli.

Level V: No Response to Stimuli
- a) Complete absence of observable change in behavior to visual, auditory, or painful stimuli.

Adult

Level I
No response to pain, touch, sound, or sight.

Level II
Generalized reflex response to pain.

Level III
Localized response. Blinks to strong light, turns toward/away from sound, responds to physical discomfort, inconsistent response to commands.

Level IV
Confused—Agitated. Alert, very active, aggressive or bizarre behaviors, performs motor activities but behavior is non-purposeful, extremely short attention span.

Level V
Confused—Non-agitated. Gross attention to environment, highly distractable, requires continual redirection, difficulty learning new tasks, agitated by too much stimulation. May engage in social conversation but with inappropriate verbalizations.

Level VI
Confused —Appropriate. Inconsistent orientation to time and place, retention span/recent memory impaired, begins to recall past, consistently follows simple directions, goal-directed behavior with assistance.

Level VII
Automatic—Appropriate. Performs daily routines in highly familiar environment in a non-confused but automatic, robot-like manner. Skills noticeably deteriorate in unfamiliar environment. Lacks realistic planning for own future.

Level VIII
Purposeful—Appropriate.

Printed with permission from the Adult Brain Injury Service, Ranchos Los Amigos Medical Center, Downey, California.

Policy Bulletins, Exceptional Education

Bulletin No. 91.6

DATE: May, 1991

TO: District Administrators, CESA Administrators, CHCEB Administrators, Directors of Special Education, Directors of Pupil Services, Special Education Program Designees, and Other Interested Parties

FROM: Victor J. Contrucci, Assistant Superintendent
Division for Handicapped Children and Pupil Services

SUBJECT: Transition Services To Be Included In Student Individualized Education Programs

This bulletin is to inform individuals of recent amendments to the Individuals with Disabilities Education Act (IDEA) (formerly known as the Education of the Handicapped Act) which occurred during its reauthorization. IDEA now requires that transition services be included in the individualized education programs (IEPs) for all students with exceptional educational needs (EENs) ages 16 and older (and, when determined appropriate for the individual, beginning at age 14 or younger) by the beginning of the 1991-92 school year, but in no case later that September 1, 1991.

The Office of Special Education Programs (OSEP) was to publish rules which would provide clarification and direction for implementing this new requirement last February 1991. It was the intent of the Division for Handicapped Children and Pupil Services (DHCPS) to include a copy of these rules with this bulletin however, rules have still not been released. In the absence of these rules it has been difficult for our office to respond to the numerous inquiries received about the meaning of this new requirements. It now appears that the rules implementing this requirement will not be promulgated until sometime this summer; thus, the DHCPS is sharing the statutory language relative to the transition requirement as it appears in IDEA which is fairly descriptive. Specifically, the IEP shall include:

> A statement of the needed transition services for students beginning no later than age 16 and annually thereafter (and, when determined appropriate for the individual, beginning at age 14 or younger), including, when appropriate, a statement of the interagency responsibilities or linkages (or both) before the student leaves the school setting, and...In the case where a participating agency, other than the educational agency, fails to provide agreed upon service, the educational agency shall reconvene the IEP team to identify alternative strategies to meet the transition objectives. [20 U.S.C. 1401(a)(20)]

The Act (IDEA) defines transition services as:

> A coordinated set of activities for a student, designed within an outcome-oriented process, which promotes movement from school to post-school activities, including post-secondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation. The coordinated set of activities shall be

> based upon the individual student's needs, taking into account the student's preferences and interests, and shall include instruction, community experiences, the development of employment and other post-school adult living objectives, and, when appropriate, acquisition of daily living skills and functional vocational evaluation. [20 U.S.C. 1401 (a)(19)]

Although it is anticipated that the rules will provide more information on procedures for operationalizing this transition requirement, the aforementioned statutory language clearly conveys the intent of Congress. The basic intent that there be communication and planning between school and other community agencies to ensure the successful transition of youth from one system to another which will result in their being able to assume roles as participating members of society is something we all now must support. This planning for the movement of youth into the community is a critical and gradual process. Agencies have long recognized the complexity of consumer movement from one system to another, and the DHCPS stands ready to assist LEAs in everyway possible in meeting this new requirement.

Questions regarding this bulletin can be directed to Mr. Paul Halverson, Director, Bureau for Exceptional Children, 124 S. Webster St., P.O. Box 7841, Madison, WI 53707-7841, (608) 266-1781 or TDD (608) 267-2427.

Bulletin No. 92.9

DATE: September 1992

TO: District Administrators, CESA Administrators, CHCEB Administrators, Directors of Special Education, Special Education Program Designees, Pupils Services Directors, and Other Interested Parties

FROM: Juanita S. Pawlisch, Assistant Superintendent
Division for Handicapped Children and Pupil Services

SUBJECT: Special Education Homebound Instruction: Residency, Procedures for Provision, and Programming Services

Numerous questions from the field are received daily regarding the school district's responsibility to provide a special education homebound program. The contents of this bulletin address the frequently expressed concerns about residency, procedures for provision of homebound instruction, and programming services for public school students with exceptional educational needs (EEN). It also responds to some additional questions which have arisen since Bulletin 85.3 "Special Education Homebound Instruction and Physician's Statement, Form PI-2217" was published in May 1985.

Exceptional educational needs (EEN) refers to a need for special education due to a handicapping condition which is determined by a multidisciplinary team. Throughout this bulletin the term EEN homebound instruction will be used to refer to special education homebound instruction. EEN homebound instruction is included in s. 115.85(2)(e), Wis. Stats. as a means for meeting the district responsibility to make appropriate programs and related services available for students with exceptional educational needs. After an IEP is developed, the district then offers a placement to enable the student to receive the instructional program and related services. The school board may provide the delivery of the special education program at the home, a hospital, a sanitarium or a convalescent home [PI 11.31(1)].

When an EEN homebound instruction program is determined to be appropriate for implementing the student's IEP, the placement of the student at home is possible only if there is a physician's statement in writing that the student is unable to attend school [s.115.85(2)(e)]. A copy of the current Special Education Physician's Statement, Form PI-2217, which may be used to obtain a physician's statement, is attached for your information.

Preschoolers with exceptional educational needs may be receiving special education and related services through home visits. This type of programming is not considered EEN homebound instruction under s. 115.85(2)(e), Wis. Stats. and therefore does not require a physician's statement.

1. Is a school district obligated to provide homebound instruction for students with EEN who are unable to attend school?

Yes. Under s.115.85, Wis. Stats. each school district is responsible for the provision of special education and related services to students with EEN who have not graduated from high school and who reside in the school district. 20 U.S.C.: s.1412(2)(b) requires that all students with disabilities have available to them a free appropriate public education which emphasizes special education and related services to meet their unique needs. Special education includes instruction at home, in hospitals, institutions, and other settings. The district has an obligation to provide special education and related services, if needed, even when a student is unable to attend a school-based program. The Wisconsin Administrative Code PI 11.31(1) provides for special education and related services for students with EEN in the home, a hospital, a sanitarium or convalescent home.

If it is anticipated that the student will be out of school less than 30 days, the student's school must provide the services the student is able to receive from the student's current IEP. A school district may not terminate services for a student with EEN based on s. 118.15(3), Wis. Stats., which creates a 30-day exception to compulsory school attendance if a student is temporarily unable to attend school.

The department reads s.118.15(3), Wis. Stats., together with other state and federal laws mandating the provision of a free and appropriate education (FAPE), to mean that if an EEN student is unable to attend his or her regular program, the full IEP does not have to be carried out for up to a 30-day period. Rather, the school district must provide the services in the student's IEP which the student can tolerate. The district must document the student's current mental and physical limitations when determining an appropriate program. Some instructional services may be provided through means other than direct instruction. (See item 17).

If it is anticipated that the student with EEN will be out of school more than 30 days, the district must review the student's IEP and develop a placement offer for the student which can be carried out in the student's current physical setting. This IEP and placement offer must be designed to provide the student with a free and appropriate education (FAPE).

2. What must a school district do in order to provide EEN homebound instruction?

For a student who is enrolled in a regular education program and who has been referred, the request for EEN homebound instruction necessitates the convening of an M-Team. Documentation of the reason why a student's physical or mental condition may require that an instructional program be provided via EEN homebound instruction must be available for consideration by the M-Team members in order to determine if a student has a handicapping condition and needs special education. The provision of EEN homebound instruction must be determined by the participants in an IEP meeting and the placement group. By the time of the IEP meeting, the district must obtain the physician's statement that the student is physically or emotionally unable to attend school.

If a student has already been identified as a student with exceptional educational needs (EEN), the district must, within a reasonable amount of time after the district receives a physician's statement indicating the student will be unable to attend school for over 30 days, convene an IEP meeting to review, and if necessary revise, the student's IEP and develop a placement offer for a program of homebound instruction. The determination of what constitutes a reasonable time frame to accomplish this process is case-specific.

NOTE: A district is not required to conduct an M-Team re-evaluation prior to placing a student with EEN in a program of homebound instruction. There is an inconsistency in the state administrative code dealing with placing a student with EEN in program of homebound instruction. At PI 11.31(1)(b)3, Wis. Admin. Code, the rule states: "The M-Team shall recommend that homebound instruction is the most appropriate program to meet a child's EEN." This rule conflicts with the requirement at PI 11.06(1)(a), Wis. Admin. Code, that a student's placement be based upon and carry out a student's IEP. Under current state and federal law, the M-Team may not make placement recommendations. Educational placement decisions are the sole responsibility of the participants in an IEP meeting and the placement group have the decision-making authority regarding when placement in a program of homebound instruction is appropriate.

If a district initiates an M-Team re-evaluation of a student and then receives a physician's statement indicating a need for a homebound program of instruction, the district must go forward with the evaluation, completing it within the 90 days prescribed by law. In the interim, the district must convene an IEP meeting within a reasonable period of time after receiving the physician's statement to consider the provision of homebound services. During the period of time in which the district is conducting its re-evaluation, it must provide services to the student, at the student's home, consistent with the current IEP, developed to provide homebound service.

3. When must EEN homebound instruction commence for a student with EEN?

Special education and related services must begin as soon as possible after the development of the IEP for EEN homebound instruction. After parental notice and consent requirements have been satisfied there can be no unreasonable delay in the provision of the EEN homebound instruction and the other services described in the IEP. A lapse in services would constitute a change of placement invoking due process procedures. The district must provide services consistent with the IEP.

4. When a student with EEN enters a hospital located in another school district, is that student a resident of the school district in which the hospital is located?

There is a long-established principle under Wisconsin law that, regardless of where the parents reside, a student living apart from the parents is a resident of the school district in which the student resides, unless his or her main purpose for residing in the district is to take advantage of the school's educational program [*The State ex. rel. School District #1 of Waukesha v. Thayer*, (74 Wis. 48, 41 N.W. 1014 1889)].

In a letter to the Attorney General dated June 17, 1988, the department advanced the position that if a physician submits a written statement that he or she anticipates a student will be hospitalized for 30 days or more, then the district where the hospital is located is required to provide education services to a student who requires special education homebound instruction. If the physician submits a written statement that the student is expected to be in the hospital for less than 30 days, the district where the hospital is located would not be responsible for the provision of educational services to the student with EEN. The student's school district of origin would provide the required services. The district of origin may contract with the district where the hospital is located or contract with a qualified teacher to provide services. In an informal opinion dated July 29, 1988, the Wisconsin Attorney General reviewed the department's advice with regard to residency and a district's responsibility to provide EEN programs. The Attorney General stated that the advice contained in the department's letter of June 17, 1988 was in accord with his understanding of *Thayer*.

5. May a school district provide a program of non-EEN homebound study to a student referred for suspected EEN prior to placement in an EEN homebound program?

Yes. A school district may provide non-EEN homebound study to a student if the student's parent or guardian requests the school board provide the student with program of curricular modifications under s. 118.15(1)(d), Wis. Stats. Non-EEN homebound study may include nonsectarian correspondence courses or other courses of study approved by the school board or nonsectarian tutoring.

Costs incurred in providing non-EEN homebound study under s.118.15(1)(d), Wis. Stats. are not eligible for state handicapped student's categorical financial aid.

6. Does participation in EEN homebound instruction satisfy the requirements as stated in s. 118.15, Wis. Stats. regarding compulsory school attendance?

Yes. Compulsory attendance may be satisfied by attendance at special education programs operated by a school district, county handicapped children's education board (CHCEB), board of control of a cooperative educational service agency (CESA), state or county residential facility or private special education service [s.115.82, Wis. Stats.]. The attendance requirement is satisfied by participation in EEN homebound instruction.

7. How can a local district respond to a request for homebound study for a student who attends a private school?

The parent or guardian may request non-EEN homebound study for the student. The request for non-EEN homebound study for a regular education student may be honored through regular education {s.118.15(1)(d)5, Wis. Stats.}.

If an EEN referral is received for the student, the director of special education/program designee will obtain parental permission to conduct a M-team evaluation. The school district should obtain medical documentation relative to physical or emotional problems which will substantiate the physical/other health impairment or emotional disturbance condition. The student with EEN shall be formally enrolled in the public school system during the period of instruction in the homebound program {PI 11.31(b)5}.

The district is reminded that the receipt of a signed physician's statement (PI-2217) is not a mandate to provide special education homebound instruction. Whether to recommend a program of homebound instruction is a decision made by those who develop the student's IEP and placement offer. The evaluation and placement process should be expedited so there will be a minimal delay in the student's educational program.

8. May a student be placed on EEN homebound instruction without a physician's statement?

No. The written physician's statement is required prior to placement in an EEN homebound instruction delivery of a special education program. The district must obtain this statement by the time of the IEP meeting. Before a student can be enrolled in an EEN homebound instruction program, the physician must indicate that the incapacity to attend school is anticipated as continuous over thirty days {PI 11.31(1)(b)2}.

Again it should be noted that home-based programming for a preschooler does not require a physician's statement as it is recognized as an appropriate delivery service option for young children with disabilities.

9. Who may sign a physician's statement for special education homebound instruction?

The Wisconsin Medical Practice Act, Chapter 448, defines "Physician" as an individual possessing the degree of doctor of medicine or doctor of osteopathy or an equivalent degree as determined by the board, and holding a license granted by the board {448.01(5)}. For the purpose of clarification, "board" means medical examining board {448.01(1)}.

10. Where does a district obtain the physician's statement, Form PI-2217?

The PI-2217 form may be used to obtain a physician's statement. This form, distributed to local educational agencies, CESAs, and CHCEBs, was attached to the Information Update-Bulletin 85.3. A copy of the current PI-2217 (11/93) form is also attached to this bulletin for your convenience.

Districts may duplicate and disseminate copies of Form PI-2217 for use by the area physicians, particularly the student's attending physician. It will be necessary to call to their attention the instructions in the upper right hand corner on the form. This form should be completed by the physician and returned to the student's school district. The district retains these completed forms.

11. How is the information provided in the physician's statement to be used?

The receipt of a physician's statement by the district for a student previously identified as EEN must be considered as a referral for suspected exceptional education need. The medical information in the physician's statement may be used in two different ways. It may be used (1) to recommend a modification in the special education program placement to an EEN homebound delivery of service or (2) to make a decision regarding a specific handicapping condition which may necessitate special education services. Whether modifying an existing IEP of a previously identified EEN student or developing an instructional program for a newly identified EEN student, the participants in the IEP meeting should consider any medical restrictions indicated by the physician which may interfere with the student's educational program.

12. What is meant by "intermittent" EEN homebound instruction?

As previously discussed in Bulletin 85.3, some students have medical conditions which necessitate consideration of intermittent EEN homebound instruction. It is the policy of the Division for Handicapped Children and Pupil Services (DHCPS), in certain cases such as malignancy, severe asthma, cystic fibrosis, muscular dystrophy, or mental and emotional disorders, and following prior consultation with the appropriate DHCPS supervisor staff, to approve intermittent EEN homebound instruction. This need may occur when physical or emotional incapacitation occurs intermittently throughout the school year and the incapacity to attend school is anticipated to be at least 30 days or more during the entire year.

13. How would a district determine if intermittent EEN homebound instruction should be considered for a student?

Based on a student's current physical condition and the student's history of attendance and absences, it may be appropriate to consider intermittent services as needed (see previous question). A district wishing to initiate intermittent EEN homebound instruction may be requested to forward a duplicate copy of Form PI-2217 to the appropriate DHCPS supervisor and review the chronicity of the condition and the school attendance record of the student. The department recommends intermittent EEN homebound should be reviewed on a regular basis, possibly twice per year.

14. May a student be in school for part of the day and receive EEN homebound instruction for part of the day?

Yes. The types of the programming would be determined based on the student's needs, physical and emotional condition, and the ability to function in each setting.

15. Are there procedures to be followed in order to terminate the provision of EEN homebound instruction services?

Termination of EEN homebound services may occur when a student is physically and/or emotionally able to return to the school environment. This is considered a change of placement. The district must evaluate and document the student's need. However this does not necessarily require the convening of an M-Team. An M-Team need only be convened under the conditions stated in PI 11.04(6)(a). The department recommends that the EEN homebound instructor participate in the meeting to develop the new IEP. A new placement offer must be developed for the student whose EEN homebound instructional services are terminated.

It is strongly recommended that advanced planning occur to ensure that the student does not lose instructional time. It is imperative that the EEN homebound instructor or the parent contact the district's special education office indicating the anticipated date when the student will be released from medical care. This provides the district with a date certain in order to plan for the return of the student to the school.

The EEN homebound instruction should be given an opportunity to dis[illegible] with the student's other teachers the instruc[illegible] services provided, any concerns or needs which surfaced during this period, grading, and to return any school materials and equipment.

16. Are there minimum and/or maximum amounts of time for EEN homebound instruction?

No. It is recommended that districts begin by looking at how a "full day" for students of similar age and grade level is defined and then develop an appropriate program for the individual student. The district cannot arbitrarily limit the number of hours of instruction. Rather, the amount of time for EEN homebound instruction must be determined by the participants in an IEP meeting and be based on the student's physical, emotional, and instructional needs. Districts must allocate an appropriate amount of time to meet those needs.

17. Must all EEN homebound instruction be direct instruction or face-to-face contact by the assigned teacher?

No. There are several alternate methods of instructional delivery. These might include telephone hook-ups, audio and video tapes, closed circuit television hook-ups, correspondence courses, and films. It is recommended that direct instruction should be provided on a daily basis.

18. What is the role of the EEN homebound teacher?

The focus of the teacher's efforts must be the student. The role of the teacher is to implement the student's IEP. This includes meeting with the student's regular and special education teachers, providing direct services to the student, and communicating with the school about the student's progress.

19. Must related services be provided when a student is receiving EEN homebound instruction?

Yes. Related services must be provided if necessary for the student to benefit from the special education. The type, frequency, and amount of related services is determined by the participants in an IEP meeting and is based on the individual student's need. The related services must be provided by appropriately licensed personnel.

20. What is the role of a student's regular classroom teacher and/or EEN teacher in provision of EEN homebound service?

These individuals should meet with the EEN homebound teacher to discuss the student's needs and learning styles, appropriate materials and activities, and evaluation procedures. They may also wish to communicate with the EEN homebound teacher on a continuing basis in order to keep abreast of the student's progress and to help ease the transition back to the regular school program.

21. If there is reason for the EEN homebound teacher to be concerned about safety, must she or he enter the house?

The EEN homebound teacher should exercise reasonable judgment and not place him/herself in jeopardy. Consistent with local school district policy and/or a negotiated contract, it is recommended that the teacher document any incident and discuss further plans for EEN homebound instruction with his/her supervisor. It is recommended that there always be a responsible adult, in addition to the teacher, in the home during EEN homebound instruction.

22. What is the family's involvement?

The family should be encouraged to provide an appropriate, quiet setting for the EEN homebound instruction, arrange for a responsible adult to remain in the home while the teacher is there, and see that other children in the home or other activities in the home do not interfere with or interrupt the EEN homebound instruction.

Parents are also responsible for arranging the student's return to the classroom and notifying the director of special education/program designee of the student's pending return to school.

23. What is the role of the school district?

The school district is responsible for providing and supervising the EEN homebound teacher and related services staff, for ensuring that the EEN homebound instruction is occurring, for providing materials and equipment necessary to implement the IEP, and for having staff available to consult and work with the EEN homebound teacher as needed.

24. Must a substitute be provided when a teacher providing homebound instruction or a therapist is absent?

Yes. The district must arrange for a substitute homebound instructor or therapist to provide the services as scheduled.

25. Is any specific kind of certification required for a teacher providing EEN homebound instruction?

Yes. The teacher must hold a valid Wisconsin teacher's license. The division strongly recommends that a teacher hold licensure in a specific special education program area when serving a student who is representative of a particular disability {PI 11.3(1)(a)}.

26. How are EEN homebound students to be graded and evaluated?

This is a matter to be decided by the participants in a meeting to develop the student's IEP. In the case of a high school student, for instance, the English teacher may grade compositions or the chemistry teacher may evaluate test performance. In other situations, the EEN homebound teacher may be responsible for all grades.

27. How can the student receiving EEN homebound instruction maintain contact with the home school?

It is recommended that the student receive the school newspaper, notes from peers, video or audio tapes from classes, attend special events such as the class play or choral concert, visit the school occasionally, have his/her class picture taken, and participate in other activities as is appropriate.

The student with EEN should receive a report card on the same schedule as peers. The parents should continue to receive any communications sent to other parents by the school such as PTO notices and newsletters. Parents should also be encouraged to attend parent conferences.

28. May a school district, at its discretion, provide EEN homebound instruction during the summer?

Yes. The student with EEN who has missed an excessive number of instructional days may need the provision of a special education instructional program and related services during the summer months.

29. Must students with EEN, including those receiving EEN homebound instruction, be provided extended school year services if it is determined they need it?

Yes. All students with EEN must be provided extended school year services when necessary. Information can be found in Exceptional Education Information Update Bulletin 84.5—Extended School Year and Summer School.

30. Is EEN homebound an appropriate program for students with severe emotional disturbances (ED)?

Appropriate programs are always determined based on the need of the individual student.

EEN homebound instruction may be an appropriate alternative if proper procedures (including a physician's statement) are followed. EEN homebound instruction is not appropriate if used as a disciplinary measure or as an exclusion tactic for a student with ED. EEN homebound should be viewed as a temporary placement with plans to reintegrate the student into the regular school setting as soon as possible.

31. Must the physician's statement come from a psychiatrist for a student with ED to be placed on EEN homebound instruction?

No. While a psychiatrist may be the most appropriate specialist in this instance, there is no requirement that a psychiatrist must complete the physician's statement in the case of a student with ED. A written statement from a licensed psychologist does not meet the requirement for a physician's statement.

Bulletin No. 93.1

DATE: February 1993

TO: District Administrators, CESA Administrators, CHCEB Administrators, Directors of Special Education, Special Education Program Designees, Directors of Pupil Services, Directors of Instruction, Local Vocational Education Coordinators, and Other Interested Parties

FROM: Juanita S. Pawlisch, Ph.D., Assistant Superintendent
Division for Handicapped Children and Pupil Services

SUBJECT: New IEP Transition Planning and Service Requirements

This bulletin is to alert all secondary administrators, educators, and pupil services staff of new federal regulations that affect current implementation of the Individuals with Disabilities Education Act (IDEA). The revised legislation requires significant involvement of high school disciplinary staff, community agency staff, and the individual student when planning and delivering transition services. All students with disabilities must receive these services through their individualized education program (IEP) by age 16. The department will be monitoring districts for their compliance with the new regulations and this bulletin will assist to clarify the requirements.

Students with disabilities specified in Subchapter V of Chapter 115, Wis. Stats. and IDEA amendments are "any person under the age of 21 years...with the following conditions...(who) may require educational services to supplement or replace regular education:

1. Physical handicap,
2. Cognitive disability or other developmental disability,
3. Hearing handicap,
4. Visual handicap,
5. Speech or language handicap,
6. Emotional disturbance,
7. Learning disability,
8. Autism,
9. Traumatic brain injury,
10. Other health impairment."

As described in Exceptional Education Information Update Bulletin No. 91.6, amendments to IDEA, formerly known as the Education of the Handicapped Act (EHA), took effect October 30, 1990, and require that all students with disabilities, at least by age 16, have transition services provided to them. The planning for the delivery of transition services to students with disabilities must occur through the IEP and include multi-disciplinary and multi-agency responsibilities and coordinated instruction, community experiences, employment objectives, and other post-school adult living objectives. The responsibility to provide appropriate transition services to students with disabilities is to be a shared responsibility among general educators, vocational educators, employment specialists (including DVR), post-secondary educators, social service and mental health specialists, and special educators.

Federal rules to implement IDEA were announced September 29, 1992, and took effect November 13, 1992. In order to effectively implement these requirements, educators will need to reconceptualize the delivery of special education at the secondary level; school and community agencies' administration will need to change and develop transition policies; and school administration will need to provide leadership to ensure the inclusion of students with disabilities in all high school programs that will improve their successful transition from school to post-secondary education and training, employment, and independent living. The following numbered requirements are excerpts from the rules pertinent to transition:

1. Anytime the IEP committee considers transition services (as defined in the legislation), it MUST

- make "when appropriate, a statement of the interagency responsibilities or linkages or both" for transition services, (20 U.S.C. 1401 (a)(20))
- "invite a representative of any other agency that is likely to be responsible for providing or paying for transition services" to the IEP meeting, (34 C.F.R. 300.344 (C)(l)(ii))
- in the event that the agency does not attend, "take other steps to obtain the participation of the other agency in the planning of any transition services," and (34 C.F.R. 300.344 (c)(3))
- invite the student to the meeting. (34 C.F.R. 300.344(c)(l)(i))

Suggestions to implement this requirement:

Under IDEA, the school district is the agency responsible for initiating the multi-agency linkages and multi-disciplinary collaboration for transition services through the IEP process. In order to achieve this, districts will need to provide training opportunities to their staff that apprise them of existing community agencies and respective responsibilities for transition services. This is best accomplished through participation in other agencies' training programs, or by presentations to school staff from professionals from community agencies.

In order to effect multi-disciplinary and multi-agency collaboration in the IEP, it is necessary to develop at the administrative level, interdepartmental policies and interagency agreements that define the process, allocate the staff, and commit the time and resources to services. Practically speaking, a classroom teacher neither has the time to coordinate all the transition components of an individual student's IEP, or the authority to appoint colleagues and community agency staff to the IEP committee. Further, the school district cannot commit the resources of another community agency to assist the student in the transition process. The Department of Education foresaw this dilemma and addressed it in this comment:

> The Secretary recognizes that LEAs do not have the authority to commit the resources of another agency. However, the SEA is responsible—through the use of interagency agreements required under 34 CFR 300.152, or other means—to ensure that services that would have been provided by other agencies will continue to be provided, either by those agencies, or by the LEA responsible for providing FAPE to the child. In accordance with 34 CFR 300.150, States may not permit LEAs to use funds under this part to provide or pay for services that would have been paid for by

a health or other agency pursuant to policy or practice but for the fact that these services are now included in a student's IEP...

The following are suggestions for specific content of agreements:

- Role of local agency staff in IEP development
- Agency services for students still in school
- Agency eligibility qualifications for EEN students
- Process for contacting agency, referring students
- Funding issues, contracting
- Confidentiality protections
- Role of school in Individual Written Rehabilitation Plan, Individual Service Plan, and Individual Treatment Plan development
- Qualification process for Supported Employment for EEN students
- Qualification process for subminimum wage
- Age limitations
- Social Security Administration involvement
- Post-secondary education services for EEN students: application procedures, entrance tests, adaptations, financial planning assistance, recruitment of EEN students
- Commitment to support services
- Process for EEN students taking university/VTAE courses while still in high school
- Process for EEN students becoming apprentices
- Application of the American's with Disabilities Act requirements to EEN students' programs, work-study, community involvement
- Transition process for EEN students in corrections, Child Caring Institutions, hospitals, and to and from community
- Job Training Partnership Act programs relationship to schools
- Process for student follow-up, and transition services evaluation

Students should be prepared for their participation at their IEP meeting through their special education program and should be invited to attend through a notice similar to the one their parents receive. Districts will need to provide students with disabilities a relevant career education program and a self-advocacy curriculum, which includes their rights under federal laws. Districts must prepare students to choose realistic transition goals in their own program development, and to demonstrate self-sufficiency and adult responsibility after high school.

2. When the IEP committee will be considering transition services (always by age 16), the parent must be notified of the fact and that their child will also be invited. (34 CFR 300.345 (b)(2)(ii))

Suggestions to implement this requirement:

Districts need to add to their parent notices of IEP meetings that transition services will be discussed, specific community agencies will be invited to attend, and their child will be invited to attend.

3. The "coordinated set of activities" for transition services which the IEP committee develops must "be based on the individual student's needs, taking into account the student's preferences and interests..." (34 C.F.R. 300.18 (b)(1))

Suggestions to implement this requirement:

In order for students with disabilities to make realistic career choices, express their preferences and interests, and be prepared for post-secondary education, adult living, and employment as required, they need to have been included, according to the IEP committee's individually tailored program, in a relevant developmental career education program K-12 (Wisconsin Developmental Guidance Model) and an Education for Employment program which are mandated for all students in Wisconsin. Unfortunately, many students with disabilities have not been included in these programs. District policies should ensure that by age 16, EEN students receive career education which includes all the mandated content and prepares them for the programming decisions they must make.

The rules require inviting the student to express her/his preferences at the IEP meeting. The IEP committee must take into account the student's preferences. If the student does not attend the IEP meeting, the district must "take other steps to ensure that the student's preferences and interests are considered." (34 C.F.R. 300.344 (c)(2))

4. The transition services the IEP committee designs must include "needed activities in the areas of:

- instruction,
- community experiences,
- the development of employment objectives,
- the development of other post-school adult living objectives,
- if appropriate, acquisition of daily living skills,
- if appropriate, functional vocational evaluation,"

or document why not. (34 C.F.R. 300.18 (b)(2) and 300.346(b))

Suggestions to implement this requirement:

A. **Instruction**—Suggested Curricular Areas

1. Financial Management
2. Career and Vocational Education
3. College Preparatory
4. Daily Living Skills (When Appropriate)
5. Recreation, Leisure Skills
6. Transportation, Mobility
7. Self-advocacy
8. Job Finding
9. Personal/Family Relationships

B. **Community Experiences**—Suggested Activities

1. Work-study
2. Youth Apprenticeships
3. Job Shadowing
4. Work Site Visitations and Presentations
5. Public Transportation Experiences
6. Shopping Experiences
7. Recreation Experiences, Clubs
8. College and Technical School Experiences

9. Apartment/House Management Experiences (Maintenance, Financial, Domestic, Personal Skills)
10. Adult Service Agency Experiences
11. Volunteer Experiences—Youth Service
12. Child Care
13. Student Organizations

C. **Employment Objectives**—Suggested Options

1. Competitive Employment—No Support
2. Competitive Employment—On the Job Training
3. JTPA Programs
4. District Co-op Programs
5. Work-study
6. Youth Apprenticeships
7. Junior Achievement
8. Entrepreneurial Model
9. Job Corps
10. Supported Employment
11. School Based Training
12. Transitional or Time-Limited Employment Training
13. Supported Job—SubminimumWage
(Approval through the Department of Industry Labor and Human Relations and U.S. Department of Labor)
14. Supported Job—Targeted Jobs Tax Credit
15. Enclave Model
16. Mobile Work Crew
17. Full-time/Part-time
18. Job Sharing
19. Job Creating
20. Job Placement Services
21. Job Matching
22. Job Counseling

D. **Post-school Adult Living Objectives**—Suggested Options

1. Independent Living (No Need for Support)
2. Independent Living (Time-Limited Support)
3. Independent Living (Ongoing, But Infrequent Support)
4. Independent Living (Daily Support)
5. Supervised Apartment
6. Group Home Living (Supervision)
7. Group Home Living (Supervision and Training)
8. Group Home Living (Skilled Nursing)
9. With Roommate
10. With Family or Relative
11. Semi-independent Living Services
12. Intermediate Care Facility (ICF)—On-going support
13. Waivered Services
14. Adult Foster Care

15. Adult Nursing Home
16. Long Term Support Services
17. Community Options Program
18. Family Support Program

E. **Daily Living Skills** (When Appropriate)—Suggested Curricular Areas

1. Self-advocacy, Assertiveness Training
2. Parenting
3. Community Resource Utilization
4. Citizenship—Awareness, Participation
5. Money Management
6. Meal Preparation
7. Housekeeping and Maintenance
8. Self Care—Hygiene
9. Recreation, Leisure
10. Purchasing Food and Clothing
11. Mental health
12. Physical health

F. **Functional Vocational Evaluation** (when appropriate)
Another definition of "functional" assessment is the popular term, "authentic" assessment. For many students with disabilities, standardized vocational assessment, including interest inventories, are invalid, unreliable, and in some cases, discriminatory against the student's disability. In the arena of vocational assessment, the evaluation's purpose must be to improve the services and to facilitate the student's completion of a vocational education program. The assessment must focus on the interactions of the student with instructors, peers, and employers. Training needs, work demands, environments, and necessary adaptations are also key issues.

There is no magic recipe for a functional vocational assessment since it is based on the concept of measuring student performance on actual job tasks or vocational activities in a realistic, authentic environment. For those occupationally specific tasks, the assessment should be conducted by the vocational educator or employer. The functional vocational assessment should provide information about the student's preferences, behavior, learning style, need for assistive devices, initiative, communication needs, physical and mental endurance, medical status, transportation needs, specific work skills, and specific methods of training and instruction needed.

All assessment should be conducted within the context of the multi-disciplinary team (M-Team) evaluation and IEP; recorded in the "present levels of performance" or "evaluation" sections of the IEP document; utilized to measure student progress, appropriateness of program, and need for modifications in program to enhance student success; communicated to students to assist them to understand their strengths, limitations, the job market, and make career decisions; and be discussed with instructors, guidance counselors, employers and community service staff to provide necessary supports and adaptations for successful vocational experiences.

5. Rehabilitation counseling services are related services and must be provided by qualified personnel, when determined by the IEP committee as necessary for the student to benefit from special education, "in individual or group sessions that focus specifically on:

- career development,
- employment preparation,
- achieving independence,
- and integration into the workplace
- and community, of a student with a disability." (34 C.F.R. 300.16(b)(10))

Suggestions to implement this requirement:

In the comment section of the rules the Education Department states:

> The Report of the House Committee on Education and Labor on Public Law 101-476 describes rehabilitation counseling as an important related service in special education, as well as an important transition service in preparing students with disabilities for employment or postsecondary education. In addition, the report states, 'It is the intent of the Committee that rehabilitation counseling...be provided to all students with disabilities for whom this service is necessary for the achievement of the individualized education program.'
>
> Because 'rehabilitation counseling services' is a type of related service under 'counseling services' in part B, public agencies must provide that service to any student with a disability, if the IEP team determines that the service is required to assist the student to benefit from special education. As indicated in the comment that follows, rehabilitation counseling may be provided by existing LEA staff, if they are qualified under (the rules) to provide those services in areas appropriate to their disciplines.
>
> The Secretary believes that existing school staff (e.g., prevocational counselors, work-study coordinators, or special education teachers), who are qualified... should be permitted to provide rehabilitation counseling services appropriate to their disciplines.

It is generally recommended that school districts view and utilize rehabilitation counseling in a manner similar to guidance counseling and school social work services. Rehabilitation counselors assigned to the school role should have caseloads determined by the extent of individual students' needs. The fiscal and administrative issues of which agency or party (school, DVR, or third party) is responsible for providing and/or funding rehabilitation counseling services may need to be addressed locally through formal interagency agreements.

6. Assistive technology devices and services must be provided if the IEP committee determines they are necessary. (34 C.F.R. 300.308)

Suggestions to implement this requirement:

Assistive technology is an important rule because of the concomitant responsibilities of medical and rehabilitation agencies to fund, evaluate the need for, and provide assistive technology services and devices. The rule on assistive technology service specifically cites "coordinating... other... services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs," which is part of the transition process. (34 C.F.R. 300. 6(d)) The Department of Education's comments to this rule in part state:

> The requirement in the (rule) limits the provision of assistive technology to educational relevancy—i.e., an assistive technology device or service is only required if it is determined, through the IEP process, to be

1. special education, as defined in (the rules),
2. a related service, as defined in (the rules), or
3. supplementary aids and services required to enable a child to be educated in the least restrictive environment.

The Secretary believes that the (rules) limit the provision of assistive technology devices and services to those situations in which they are required in order for a child to receive FAPE...

Procedures for determining the need for assistive technology services…is…part of the individual evaluation of each child (M-Team),...done by qualified individuals…IDEA funds…may be used to obtain the necessary expertise, and, if appropriate, to train existing school personnel.

PI 11.04

PI 11.04 Multidisciplinary teams. (1) CONSENT AND NOTICE FOR THE M-TEAM EVALUATION PROCESS. (a) 1. Except as provided in subd. 3, a board may not conduct an M-team evaluation of a child without the parent's written consent. The consent obtained by the board shall meet the requirements under s. PI 11.09(2)(a) and, if the child is determined to be a child with EEN, the consent shall continue in effect and thereby grant consent for subsequent reevaluations until the parent revokes his or her consent in writing.

2. Except as provided in subd. 3, a board may not conduct a reevaluation of a child if the child's parent has revoked his or her consent for an M-team evaluation unless the parent grants consent again.

3. If a parent refuses or revokes his or her consent for an M-team evaluation, a board may initiate a hearing under s. PI 11.10 to determine whether the board shall conduct an M-team evaluation of a child without the child's parent's written consent.

(b) Whenever a board proposes or refuses to initiate or change the M-team evaluation process, it shall send a written notice to the child's parent of its intent to so propose or refuse. The notice shall be sent within a reasonable period of time before the proposed action or before the refusal to take action and shall meet the requirements under s. PI 11.09 (1).

(2) APPOINTMENT AND COMPOSITION. (a) Whenever a board receives an EEN referral for a child who is a resident of the district and who has not graduated from high school, the board shall appoint an M-team to conduct an M-team evaluation of the child to determine whether the child is a child with EEN. The board shall select the members of an M-team for their expertise in the handicapping condition the child is suspected to have. All members of an M-team shall be employes of the board; a CESA or CHCEB serving the district; a board that is a participant in a 66.30 agreement entered into by the board; a district that has entered into an agreement under s. 121.85, Stats., with the board; a board within the district's CESA, if the employes are serving the district through a CESA program; the Wisconsin school for the visually handicapped; or, the Wisconsin school for the deaf. An employe of the Wisconsin school for the visually handicapped or of the Wisconsin school for the deaf may not be appointed to an M-team unless he or she is licensed under subch. VII of ch. PI 3, is not management personnel, and has been designated by the superintendent of his or her school as being available to participate on an M-team. The professional recommendations made by staff members of the Wisconsin school for the visually handicapped and the Wisconsin school for the deaf, when serving as members of an M-team, shall not be construed to be those of the department. For purposes of this paragraph, a person is an employe of the board even if the only function that he or she is employed to perform is to serve as a member of an M-team.

(b) An M-team shall include all of the following:

1. An employe of the board.

2. At least 2 persons who are skilled in assessing children and programming for children with handicapping conditions. At least one of these 2 persons shall be a teacher who is licensed to teach in the handicapping condition that the child is suspected to have. If a child is suspected to have or is currently identified as having more than one handicapping condition, there shall be a teacher or teachers on the M-team who is or are licensed to teach in all of the child's suspected and currently identified handicapping conditions.

3. If a child is suspected of having a learning disability, the child's regular education teacher, if the child has one. If the child does not have a regular education teacher, a regular education teacher licensed to teach a child of his or her age.

4. Other individuals as needed to evaluate and determine the needs of the child.

5. If a child is suspected of needing occupational therapy, an occupational therapist.

6. If a child is suspected of needing physical therapy, a physical therapist.

(3) M-TEAM EVALUATION. (a) The M-team shall examine all relevant available data concerning the child including the following:

1. Records concerning the child's previous and current educational performance, health and social behavior.

2. Records of previous interventions and special education programs provided to the child and the effects of the interventions and programs.

3. Records of the child's ability to acquire information via different media such as oral presentations, written documents and visual displays.

(b) If the child is suspected to be or is currently identified as being learning disabled, at least one member of the M-team, other than the child's regular teacher, shall observe the child's performance in the regular classroom. If the child is of less than school age or is out of school, the M-team member shall observe the child in an environment appropriate for a child his or her age.

(c) The parent shall be involved and consulted throughout the entire M-team process.

(d) The M-team shall use evaluation materials and procedures as needed to assess the child in all areas related to the suspected handicapping condition. If tests and other evaluation materials and procedures are used they shall meet the following requirements:

1. They shall be provided and administered to the child in the child's native language or other mode of communication, unless it is clearly not feasible to do so.

2. They may not be racially or culturally discriminatory.

3. They shall be validated for the specific purpose for which they are used.

4. They shall be administered by trained personnel in accordance with the instructions provided by their producer.

5. They shall be tailored to assess specific areas of educational need and not simply to provide a single general intelligence quotient.

6. Tests shall be selected to ensure that when a test is administered to a child with impaired sensory, manual, or speaking skills, the test results accurately reflect the child's aptitude or achievement level or whatever other factors the test purports to measure, rather than reflecting the child's impaired sensory, manual, or speaking skills, except where those skills are the factors which the test purports to measure.

(e) Any member of the M-team may request additional information or conduct additional tests at any time during the evaluation process.

(f) An M-team shall comply with pars. (a) to (d) prior to the M-team meeting under sub. (4).

(g) Each member of the M-team shall prepare a written report of the evaluations he or she conducted and the findings. The members shall submit their reports to the director or program designee with the proposed M-team report or reports under sub. (5)(d)1, unless the parent asks to have the individual reports available at the M-team meeting. The members shall have their individual reports available at the M-team meeting if the parent requests that in writing within 10 days of the date the board sent the notice of the M-team evaluation under sub. (1)(b).

(h) An M-team may consult with persons other than employes of the board if it is needed to appropriately assess whether a child is a child with EEN. Individuals other than employes of the board may not be appointed official members of an M-team.

(4) MEETING. (a) The board shall set a date for the M-team to meet and discuss the members' evaluations and findings and all the information obtained under sub. (3).

(b) The board shall notify the parent of the meeting within a reasonable amount of time prior to the meeting. The notice shall include all of the following:

1. The date, time and location of the meeting.

2. Information that the purpose of the meeting is to determine whether the child is a child with EEN.

3. The names and titles of the members of the M-team and any additional people who may be attending.

4. Information that the parent may attend the meeting and may bring an advocate.

5. If the child is a member of a minority, information that a member of that minority may attend the meeting and have input into the M-team's decision-making process.

(c) Each member of the M-team shall attend the meeting or shall be represented by a person who is knowledgeable about the child and the member's evaluations and findings. More than half of the members of the M-team shall be present at the meeting.

(d)At the meeting the M-team shall discuss and consider all of the information received under sub. (3) and it shall discuss and compare the evaluations and findings of each of the members. Based upon its evaluations and findings the M-team shall, using the criteria established in s. PI 11.35, determine if the child has a handicapping condition. An M-team may not find that a child has a handicapping condition based upon a single evaluation procedure. If the child is found to have a handicapping condition, the M-team shall determine whether as a result of the handicapping condition the child needs special education. The M-team shall reach a conclusion regarding whether the child is a child with EEN. If the M-team concludes that a child is a child with EEN, the M-team shall consider and make recommendations regarding what related services the child may need. If a need for occupational or physical therapy has been considered by the M-team, the M-team shall reach a conclusion regarding such need. An M-team may not reach a conclusion regarding the need for occupational or physical therapy unless an appropriate therapist is a member of the M-team.

(5) M-TEAM REPORT. (a) As a result of the M-team meeting, the M-team shall write an M-team report which shall include at least the following:

1. A list of the handicapping conditions that the M-team found the child to have using the criteria in s. PI 11.35.

2. The M-team's conclusions regarding whether the child needs special education because of a handicapping condition.

3. If the child's need for occupational or physical therapy was considered, the M-team's conclusions regarding such need.

4. A statement that documents the reasons for each of the M-team's findings and conclusions listed in subds. 1 to 3.

5. Recommendations regarding what related services the child may need.

(b) If an M-team finds that a child is not a child with EEN the M-team report shall also include the following:

1. An identification of the child's non-exceptional educational needs.

2. A referral to any programs, other than special education programs offered by the board from which the child may benefit.

3. Information about any programs and services other than those offered by the board that the M- team is aware of that may provide a benefit to the child.

(c) If there is unanimous agreement among the M-team members about the information, findings and conclusions required in pars. (a) and (b), the M-team shall write one proposed M-team report which is signed by all of the members and which indicates the team's unanimity. If there is not unanimity among the M-team members, members of the M-team shall write separate proposed M-team reports that meet the requirements under pars. (a) and (b). M-team members may write a separate proposed M-team report individually or with other members. Each member of the M-team shall sign a proposed M-team report with which he or she agrees.

(d) 1. After completing a proposed M-team report or reports under par. (c), the M-team shall send a copy of the proposed M-team report or reports to the director or program designee for his or her approval.

2. Subject to subds. 3 and 4, the director or program designee may approve as the M-team report for a child, the unanimously proposed M-team report or one of the separately proposed M-team reports submitted by the M-team under subd. 1.

3. If the director or program designee approves as the M-team report either a unanimously proposed M-team report, or a separately proposed M-team report that is signed by a majority of the M-team members, the director or program designee shall send to the board and to the child's parent, a copy of the approved M-team report and all of the separately proposed M-team reports submitted. The director or program designee shall indicate which is the approved M-team report and shall state in writing why that report was selected. If the director or program designee intends to approve as the M-team report, a separately proposed M-team report that is signed by a minority of the M-team members, the director or program designee shall proceed as provided in subd. 4.

4. a. The director or program designee may approve as the M-team report, a separately proposed M-team report that is signed by a minority of the M-team members, if the director or program designee attended the M-team meeting that re-

sulted in the proposed M-team reports. The director or program designee shall send to the board and to the child's parent, a copy of all of the separately proposed M-team reports submitted and the director or program designee shall indicate which is the approved M-team report and shall state in writing why that report was selected.

b. If the director or program designee intends to approve as the M-team report, a separately proposed M-team report that is signed by a minority of the M-team members, and the director or program designee did not attend the M-team meeting which resulted in the proposed M-team reports, the director or program designee shall set a date for the director or program designee to meet with the M-team and to discuss the proposed M-team reports. The director or program designee shall notify the parent of the meeting within a reasonable amount of time prior to the meeting and the notice shall include the information listed in sub. (4)(b). Each member of the M-team shall attend the meeting or shall be represented by a person who is knowledgeable about the child and the member's evaluations and findings. More than half of the members of the M-team shall be present at the meeting. At the meeting the M-team and the director or program designee shall discuss the members' evaluations and findings and the separately proposed M-team reports. Any member of the M-team may amend his or her proposed M-team report as a result of the meeting. After the meeting the director or program designee may approve as the M-team report any one of the separately proposed M-team reports submitted by the M-team. If the director or program designee approves one of the separately proposed M-team reports as the M-team report, the director or program designee shall send to the board and to the child's parent, a copy of all of the separately proposed M-team reports submitted and the director or program designee shall indicate which is the approved M-team report and shall state in writing why that report was selected.

5. If the child's parent was unable to attend the most recent M-team meeting, the director or program designee shall send with the approved M-team report and any separately proposed M-team reports, a notice informing the parent that the parent may request a conference with the director or program designee to discuss any proposed M-team report and the approved M-team report and that an advocate may accompany the parent.

6. a. If the director or program designee does not accept the unanimously proposed M-team report or any of the separately proposed M-team reports as the M-team report, he or she shall send the proposed report or reports back to the M-team with a list of questions that the director or program designee wants the M-team to consider. The director or program designee may appoint additional members to the M-team. The new members shall comply with sub. (3)(a) to (e) prior to a new M-team meeting.

b. When the director or program designee does not accept a proposed M-team report the director or program designee shall set a date for the M-team to meet and discuss the director's or program designee's concerns. The M-team shall notify the parent of the meeting within a reasonable amount of time prior to the meeting and the notice shall include the information listed in sub. (4)(b).

c. Each member of the M-team shall attend the meeting or shall be represented by a person who is knowledgeable about the child and the member's evaluations and findings. More than half of the members of the M-team shall be present at the meeting. At the meeting the M-team shall address the questions and issues raised by the director or program designee. Any member of the M-team may amend his or her proposed M-team report as a result of the meeting.

d. After the meeting in subd. 6. a, the M-team shall send a copy of the unanimously proposed M-team report or all of the separately proposed M-team reports to the director or program designee for his or her approval.

e. After receiving the proposed M-team report or reports, the director or program designee shall approve an M-team report. If the director or program designee approves as the M-team report a unanimously proposed M-team report or a separately proposed M-team report that is signed by a majority of the M-team members, the director or program designee shall comply with subds. 3 and 5. If the director or program designee intends to approve a separately proposed report that is signed by a minority of the M-team members, the director or program designee shall comply with subds. 4 and 5.

BEST COPY AVAILABLE

(6) REEVALUATION. (a) A board shall initiate a reevaluation for each child who is receiving special education as follows:

1. No later than 3 years from the date the last M-team report completed on the child was approved under sub. (5)(d).

2. Whenever the board has reason to believe that the child is no longer a child with EEN;

3. Whenever the board has reason to believe that the child no longer has a previously identified handicapping condition;

4. Whenever the board has reason to believe that the child has a handicapping condition that has not been identified; and

5. Whenever a child's parent or teacher requests a reevaluation.

(b) Any board and M-team that is conducting a reevaluation shall comply with the requirements under this section.

(c) Except as otherwise provided by law, a board may not stop providing special education to a child unless, as a result of a reevaluation, an M-team determines that the child is no longer a child with EEN.

(d) A board may not identify or cease to identify a child as having a handicapping condition unless that is a determination made by an M-team as a result of an M-team evaluation.

(7) NOTICE FOR IDENTIFICATION PURPOSES. Whenever a board proposes or refuses to initiate or change the identification of a child as a child with EEN it shall send a written notice to the child's parent of its intent to so propose or refuse. The notice shall be sent within a reasonable period of time before the proposed action or before the refusal to take action and shall meet the requirements under s. PI 11.09(1).

(8) HEARING RIGHTS. A parent may initiate a hearing under s. PI 11.10 whenever a board proposes or refuses to initiate or change the M-team evaluation process or the identification of a child as a child with EEN.

PI 11.05 Individualized education program. (1) APPOINTMENT OF STAFF. When an M-team report is approved under s. PI 11.04(5)(d) indicating that a child who is 3 years of age or older, a resident of the school district and who has not graduated from high school, is a child with EEN, a board shall appoint staff to develop an IEP for the child. The staff appointed by the board shall include a person who is knowledgeable about the child, the type of evaluation data available on the child and the program options.

(2) IEP MEETING. (a) The board shall set a date for a meeting to discuss the special education program and related services needs of the child and to develop an IEP for the child. The meeting shall be held within 30 days after an M-team report is approved under s. PI 11.04(5)(d) indicating that the child is a child with EEN. The time and location of the meeting shall be agreed upon by the board and the child's parent. The board shall ensure that the reports required under s. PI 11.04(5)(c) and (d) are completed and in writing prior to the IEP meeting. These reports shall be available to the parent prior to the IEP meeting.

(b) The board shall ensure that each IEP meeting includes the following participants:

1. A representative of the board, other than the child's teacher, who is qualified to provide, or supervise the provision of, special education.

2. The child's teacher.

3. One or both of the child's parents, subject to sub. (3).

4. The child, if appropriate.

5. If the IEP process is initiated because of an initial eligibility determination of a child:

a. A member of the M-team that evaluated the child; or

b. A person who is knowledgeable about the evaluation procedures used with the child and is familiar with the report issued under s. PI 11.04(5).

5m. If a purpose of the IEP meeting is the consideration of transition services for a child, the board shall invite the following:

a. The child. If the child does not attend, the board shall take other steps to ensure that the child's preferences and interests are considered.

b. A representative of any other agency that is likely to be responsible for providing or paying for transition services. If a representative under this subparagraph does not attend, the board shall take other steps to obtain participation of the other agency in the planning of any transition services.

6. If a child is enrolled in a private school and receives or is eligible to receive special education from the board, a representative of the private school. If the private school representative cannot attend the meeting the board shall ensure the school's participation by some other means such as individual or conference telephone calls.

7. If a board is considering placing the child in a private school, a representative of the private school. If the private school representative cannot attend the meeting the board shall ensure the school's participation by some other means such as individual or conference telephone calls.

8. Persons other than those specified in subds. 1 to 7 may attend the meeting at the discretion of the parent or the board.

(c) The participants at the IEP meeting shall review the child's M-team report written in accordance with s. PI 11.04(5) and shall consider the M-team's recommendations regarding related services.

(3) PARENT PARTICIPATION. (a) The board shall send a written notice to the parents within a reasonable amount of time prior to the IEP meeting. The notice shall meet the requirements under s. PI 11.09(1) unless a notice meeting the requirements of s. PI 11.09(1) has been provided within the previous 30 days. The notice under this subsection shall include the following:

1. The date, time, and location of the meeting and information that the meeting must be scheduled at a time and place agreed upon by the board and the child's parents.

2. The purpose of the meeting.

3. The names and titles of the persons who will be attending the meeting.

4. Information that the parent may bring other people to the meeting.

(am) If a purpose of the meeting is the consideration of transition services for a child, the notice shall include the following:

1. The purpose;

2. That the board will invite the child;

3. Identification of any other agency that will be invited to send a representative.

(b) If no parent is able to attend the meeting the board shall ensure the parent's participation by some other means such as individual or conference telephone calls.

(c) If no parent can attend the meeting or participate by other means, the board shall maintain a record of its attempts to have the parent attend or participate in the meeting. Notes from any contact made with the parent such as telephone calls or visits to the home or workplace and any correspondence with the parent shall be retained as part of the record.

(d) The board shall take the necessary steps to ensure that the parent understands what is said at the IEP meeting, including arranging for an interpreter if the parent is deaf or if the parent's primary language is other than English.

(4) THE IEP. (a) The IEP for each child shall include:

1. A statement of the child's present levels of educational performance.

2. A statement of annual goals, including short term instructional objectives.

3. The extent to which the child will be able to participate in regular educational programs.

4. A statement of the specific special education and related services including assistive technology services or devices, if appropriate, to be provided to the child.

5. The projected dates for initiation of services and the anticipated duration of the services.

6. Appropriate objective criteria and evaluation procedures and schedules for determining, on at least an annual basis, whether the short term instructional objectives are being achieved.

7. Beginning no later than age 16 and at a younger age, if appropriate, an annual statement of the needed transition services which includes a coordinated set of activities to be provided to the child, including, if appropriate, a statement of the board's, each public agency's, and each participating agency's responsibilities or linkages, or both, before the child leaves the school setting. The coordinated set of activities under this subdivision shall meet the following requirements:

a. Be based on the individual child's needs, taking into account the child's preferences and interests;

b. Include instruction; community experiences; the development of employment and other post-school adult living objectives; and

c. If appropriate, include acquisition of daily living skills and functional vocational evaluation.

8. If a child does not need transition services in one or more of the areas under subd. 7 b, a statement to that effect and the basis upon which the determination was made.

9. If a child has a visual handicap, a statement indicating whether the child needs to be taught braille. If the child does not need to be taught braille, a statement to that effect and the basis upon which the determination was made.

(b) A child's IEP may not include occupational or physical therapy unless the M-team has concluded that the child needs such therapy.

(c) Within the time period specified under s. PI 11.06(4), a board shall develop and implement a placement offer to carry out a child's IEP.

(5) REVIEW OF THE IEP. (a) At least annually a board shall review the IEP of each child with EEN who is a resident of the district. Whenever a board conducts a review of a child's IEP or wants to change a child's IEP it shall comply with this section.

(b) If a child is attending a private school and the private school is providing special education services to the child, the private school may conduct reviews of a child's IEP at the discretion of the board. A private school that conducts a review or that wants to change a child's IEP shall comply with the requirements under this section. The board shall ensure that at any IEP meeting held by a private school, the parent and the board are represented and are involved in any decision made about the child's IEP. No changes may be made to the child's IEP unless they are approved by the parent and the board.

(c) A parent may request a board to conduct a review of his or her child's IEP. If a board agrees to conduct a review based on a parent's request, it shall comply with the requirements under this section.

(d) If a participating agency fails to provide agreed-upon transition services contained in the IEP of a child with EEN, the board shall, as soon as possible, initiate a meeting for the purpose of identifying alternative strategies to meet the transition objectives and, if necessary, revising the child's IEP.

(6) PURPOSE OF AN IEP. (a) A board shall provide special education and related services to a child consistent with the child's current IEP. A board may not provide special education and related services to a child unless the child has a current IEP.

(b) An IEP is a commitment of resources to a child by a board. An IEP is not a guarantee that the goals and objectives found in the IEP will be achieved.

(7) NOTICE AND HEARINGS. (a) Whenever a board refuses to initiate or change an IEP it shall send a written notice to the child's parent of its intent to refuse. The notice shall be sent within a reasonable period of time before the refusal to take action and shall meet the requirements under s. PI 11.09(1).

(b) A parent may initiate a hearing under s. PI 11.10 whenever a board proposes or refuses to initiate or change his or her child's IEP.

Parent Preparation for IEP Meetings

- **Clarify the nature of the meeting.** Find out in advance the meeting's agenda, how long it will last, and who will attend. You may wish to request the presence of other school staff members or suggest that more time be allocated.

- **Become familiar with your child's learning and behavioral characteristics.** Observe your child in different situations at home (for example, interacting with peers, completing homework, following directions, and playing games). Consider going to school sometime before the meeting to observe your child in class. (Be sure to give the school advanced notification.) Review samples of the schoolwork. These steps can help you pinpoint your child's strengths and weaknesses.

- **Talk with your child.** Ask questions that will aid you in developing an educational program appropriate to his or her needs. (Probe gently to find out such information as subjects and activities your child likes or dislikes in school, perceptions of strengths and weaknesses, conditions under which he or she learns best).

- **Talk with other parents.** Other parents who have attended meetings can guide you in what will be discussed and decided at the meeting, how to participate effectively, and what you need to know about the school policies and procedures. Parent organizations (for example, the Association for Children and Adults with Learning Disabilities) also can be helpful.

- **Review evaluation reports.** Request reports from the school for all of the most recent evaluations. These evaluations will form the basis for the individualized education program, so going over them and thinking about their implications will help you contribute to the meeting. In reviewing these reports, jot down questions as well as points of agreement and disagreement.

- **Review state and federal special education regulations.** Become familiar with the individualized education program—its parts and the process for development. Other parents and parent organizations can help you make sense of the regulations.

- **Consider what you want included in the program.** After you've gone through some of the above steps, write down your ideas about your child's strengths and weaknesses; specific skills and concepts you want your child to learn; program placement and related services you believe are necessary to meet your child's educational needs; approaches that are effective and ineffective in teaching, motivating, and disciplining your child; and subjects and school activities in which your child should participate with children who do not have disabilities.

- **Write out a list of questions you may have.** Bring them to the meeting.

- **Consider bringing another person with you to the meeting.** Your guest—a relative, friend, another parent with experiences in the process, a therapist, or an advocate—may have special education expertise or knowledge of your child, provide support to you and your child, and help you to raise important issues and questions. Parent organizations may provide advocates who will accompany you under special circumstances. You may want to notify the school in advance if you intend to bring someone with you. If a person is unable to attend (for example, your family doctor), you may bring along his or her written statement to share with the school staff.

- **Think about whether your child should attend the meeting, or some part of it.** Discuss the pros and cons with school staff and with your child. Children should participate in meetings more often than they do. Their perceptions often are insightful and can be valuable in designing specific aspects of the educational program. Your child may be more receptive to an educational program that he or she has helped to design; adolescents are especially likely to resist programs they feel are imposed on them without their input. Consider whether your child will be more comfortable in a smaller, less formal meeting and whether he or she should attend all or only part of the meeting.

  You might prepare your child for the meeting by helping him or her to understand its purpose and format and the specific issues to be discussed.

Talk over any questions your child may want to ask or may be asked. Encourage your youngster to write down—if appropriate—questions or ideas for discussion at the meeting. Having your child make a specific and concrete list of positive and negative aspects of school, as well as things he or she would like to learn, may be helpful. It may also be useful to role-play your child's involvement in the meeting.

- **Rehearse your part in the meeting.** If you don't have much experience at formal meetings—or even if you do—you may want to practice telling someone the points you want to get across at the meeting and responding to proposals presented by the school staff.

Adapted with permission from *Special Education Handbook: A Comprehensive Guide for Parents and Educators* by K. Shore. New York: Teachers College Press, 1986.

Resources 12

This list of resources is not exhaustive. Other materials exist beyond this listing that may be helpful for educators, family members, and students with traumatic brain injury. For further information contact the Wisconsin Department of Public Instruction.

Materials

Understanding the Injury

Berrol, S., and M. Rosenthal. *The Journal of Head Trauma Rehabilitation.* December 1986, 1(4), p. viii.

Blosser, Jean. *Pediatric Traumatic Brain Injury: Proactive Intervention.* San Diego, CA: Singular Publishing Group, 1994.

Boyer, M., and P. Edwards. "Outcome 1 to 3 Years after Severe Traumatic Brain Injury in Children and Adolescents." *Injury: The British Journal of Accident Surgery* (22) 1991, pp. 315-320.

Bromen, S.H., and M.E. Michel, eds. *Traumatic Head Injury In Children.* Oxford University Press, 1995.

Bruce, Derek A. "Head Injuries in the Pediatric Population." *Current Problems in Pediatrics* Vol XX, No 2 (1990), pp. 63-107.

Caveness, W. "Epilepsy, a Product of Trauma in our Time." *Epilepsia* 17 (1976), pp. 207-215.

Friedman, William A. "Head Injuries." *Clinical Symposia* 35-4 (1983), pp. 2-32.

Golden, C. *Diagnosis and Rehabilitation in Clinical Neuropsychology.* Springfield, IL: Charles Thomas Publishers, 1981.

Jaffe, Kenneth, and Ross M. Hays. "Pediatric Head Injury: Rehabilitative Medical Management." *The Journal of Head Trauma Rehabilitation* 1(4), pp. 30-40.

Kelly, J., and C. Filley. "Traumatic Brain Injury in Children." In *Analysis, Understanding and Presentation of Cases Involving Traumatic Brain Injury.* Ed. C. Simkins. Washington, DC: National Head Injury Foundation, 1994, pp. 37-52.

Levin, H.S., et al. *Catastrophic Brain Injury.* Oxford University Press, 1996.

Mild Traumatic Brain Injury: The Hidden Consequences. Videotape. University of Wisconsin Hospital and Clinics, Madison, WI.

Oddy, M. "Head Injury During Childhood." *Neuropsychological Rehabilitation* 3(4), 1993, pp. 301-340.

Rosenthal, M., et al. *Rehabilitation of the Adult and Child With Traumatic Brain Injury.* Philadelphia: F.A. Davis Company, 1990.

Savage, R. "Identification, Classification and Placement Issues for Students with Traumatic Brain Injuries." *The Journal of Head Trauma Rehabilitation* 6(1), 1991, pp. 1-9.

__________. "Children With Traumatic Brain Injury." *TBI Challenge* 1(3). Washington, DC: National Head Injury Foundation, Summer 1993, pp. 4-5.

Savage, Ronald C., and Gary F. Wolcott, M. eds. *An Educator's Manual: What Educators Need to Know about Students with Brain Injury.* Southborough, MA: Brain Injury Association, 1995.

Savage, R., and B. Ross. "School-Age Children with Traumatic Brain Injuries." In Analysis, *Understanding and Presentation of Cases Involving Traumatic Brain Injury.* Ed. C. Simkins. Washington, D.C.: National Head Injury Foundation, 1994, pp. 53-64.

Smith, A. "Critical Clinical Considerations in Neuropsychological Assessments of Closed Head Injury and Traumatic Brain Injury." In *Analysis, Understanding and Presentation of Cases Involving Traumatic Brain Injury.* Ed. C. Simkins. Washington, DC: National Head Injury Foundation, 1994, pp 1-14.

Sorenson, S., and J. Kraus. "Occurrence, Severity and Outcomes of Brain Injury." *The Journal of Head Trauma Rehabilitation* 6(2), June 1991, pp. 1-10.

Yudofsky, S., and R. Hales. Eds. *The American Psychiatric Press Textbook of Neuropsychiatry.* 2nd ed. Washington D.C.: American Psychiatric Press, 1992.

Returning to School

Cohen, Sally B. "Educational Reintegration and Programming for Children with Head Injuries." *Journal of Head Trauma Rehabilitation* 1(4), 1986, pp. 22-29.

DePompei, R., and J. Blosser. "Strategies for Helping Head Injured Children Successfully Return to School." *Language, Speech, and Hearing Services in Schools* 18 (October 1987), p. 292-300.

Goyer, Victor, and Jean Tsokanis. "Academic Component to the Rehabilitation of Those with Traumatic Brain Injuries." Poster presented at the National Head Injury Foundation's Fifth Annual National Symposium. Chicago, IL. 12-16 Nov. 1986. New Medico Head Injury System of Middleboro, MA.

Gerring, Joan P., and Joan M. Carney. *Strategies for Educational Reintegration* (2nd ed). San Diego, CA: Singular Publishing Group, Inc., 1992.

Harris, W., and C. Mahar. "Problems in Implementing Resource Programs in Rural Schools." *Exceptional Children* 10, pp. 95-99.

Krankowski, Theresa. "Transitioning the Student with TBI from School to Employment, Postsecondary Education and Independent Living." *TBI Challeng (*Spring 1995), pp. 46-47.

Kreutzer, Jeffrey S., and Paul Wejman. *Community Integration Following Traumatic Brain Injury.* Baltimore, MD: Paul H. Brookes Publishing Co., 1990.

Miller, K. "The Re-entry of Traumatically Brain Injured Students into Rural School Systems." *Cognitive Rehabilitation* (July-August 1988).

Savage, Ronald C. "Transitioning Pediatric Patients Into Educational Systems: Guidelines for Rehabilitation Professionals." *Cognitive Rehabilitation* (July-August 1988) pp. 10-14.

School Re-entry for the Student with Traumatic Brain Injury. Videotape. University Hospital School, Iowa City, Iowa.

Wisconsin Department of Public Instruction. *All Means All: Including Special Populations in School to Work Programs*. Madison, WI: Wisconsin Department of Public Instruction, 1995.

__________. *Collaborative Transition Programming*. Madison, WI: Wisconsin Department of Public Instruction, 1995.

__________. *Developing IEPs Which Incorporate Transition Services*. Madison, WI: Wisconsin Department of Public Instruction, 1995.

__________. *The EEN Triangle of Support: A Guide For Parents*. Revised ed. Madison, WI: Wisconsin Department of Public Instruction, 1993.

__________. *Guidelines for Conducting Functional Vocational Evaluations*. Madison, WI: Wisconsin Department of Public Instruction, 1995.

__________. *Overview of Transition Service for Students with Disabilities*, IDEA rules attached. Madison, WI: Wisconsin Department of Public Instruction, 1994.

__________. *A Parents' Guide to Transition for Youth with Disabilities*. Madison, WI: Wisconsin Department of Public Instruction, 1995. Information on transition to Wisconsin Technical College System is available in this guide.

__________. *School and DVR's Responsibilities in the Provision of Transition Services to Students with Disabilities*. DPI/DVR Interagency Agreement attached. Madison, WI: Wisconsin Department of Public Instruction, 1995

__________. *Vocational Experience Programs for Students with Disabilities: Labor Laws, Program Guidelines, Vocational Assessment*. Madison, WI: Wisconsin Department of Public Instruction, 1995.

Ylvisaker, Mark, Ed. *Head Injury Rehabilitation: Children and Adolescents*. San Diego: College Hill Press, 1985.

Ylvisaker, Mark, Timothy Feeney, and Karry Mullins. "School Reentry Following Mild Brain Injury: A Proposed Hospital-to-School Protocol." *Journal of Head Trauma Rehabilitation* (December 1995), pp. 42-49.

Educational Assessment

Cohen, Sally B. "A Cognitive Approach to Educational Assessment and Programming." Presentation at the Rehabilitation Institute of Pittsburgh, 1986.

Rosenthal, M., et al. Eds. *Rehabilitation of the Adult and Child with Traumatic Brain Injury*. 2nd ed. Philadelphia: F.A. Davis Co., 1990.

Ylvisaker, M., P. Hartwick, and M.B. Stevens. "School Re-entry Following Head Injury: Managing the Transition from Hospital to School." *Journal of Head Trauma Rehabilitation* 6.1 (1991), pp. 10-22.

Individualizing an Education

Adamovich, B.B., J.A. Henderson, and S. Auerbach. *Cognitive Rehabilitation of Closed Head Injured Patients: A Dynamic Approach*. San Diego, CA: College-Hill Press, 1985.

Fuld, P.A., and P. Fisher. "Recovery of Intellectual Ability After Closed Head Injury" *Developmental Medicine and Child Neurology* 19 (1977), pp. 495-502.

Grimm, B.H., and J. Bleiberg. "Psychological Rehabilitation in Traumatic Brain Injury." In *Handbook of Clinical Neuropsychology, Vol. 2*. Eds. S.B. Filskow and T.J. Boll. New York: Wiley, 1986, pp. 495-560.

Haarbauer-Krupa, J., et al. "Cognitive Rehabilitation Therapy: Late Stages of Recovery." In *Head Injury Rehabilitation: Children and Adolescents*. San Diego: CA: College-Hill Press, 1985, pp. 311-343.

Long, C.J., W.D. Gouvier, and J.C. Cole. "A Model of Recovery for the Total Rehabilitation of Individuals with Head Trauma." *Journal of Rehabilitation* 50, pp. 39-45.

McGuire, Tona L., and Michael B. Rothenberg. "Behavioral and Psychosocial Sequelae of Pediatric Head Injury." *Journal of Head Trauma Rehabilitation* 1(4), 1986, pp. 1-6.

Slenkovich, J.E. "Extended School Year. When Is It Really Required?" *The Schools' Advocate.* (February 1985), pp. 65-66, 68-71.

Telzrow, C. "Management of Academic and Educational Problems in Head Injury." *Journal of Learning Disabilities* 20.9 (November 1987).

Wood, R.L. "Management of Attention Disorders Following Brain Injury." In *Clinical Management of Memory Problems*. Eds. B.A. Wilson and N. Moffat. Rockville, Maryland: Aspen, 1984, pp. 148-170

Managing Behavior

Bigler, E.D. *Traumatic Brain Injury: Mechanisms of Damage, Assessment, Intervention, and Outcome.* Austin, TX: Pro-ed, 1992.

Burke, W.H. *Head Injury Rehabilitation: Developing Social Skills.* Houston, TX: HDI Publishers, 1988.

Cangelosi, James S. *Classroom Management Strategies*. 2nd ed. White Plains, NY: Longman Publishing Co., 1993.

Elliott, S.N., and F.M. Gresham. *The Social Skills Intervention Guide: Practical Strategies for Social Skills Training.* Circle Pines, MN: AGS, 1991.

Forest, Marsha and Evelyn Lusthaus. "Everyone Belongs with the MAPS Action Planning System." *Teaching Exceptional Children*, Winter 1990, pp. 32-35.

Gelfand, D.M., and D.P. Hartmann. *Child Behavior Analysis and Therapy*. 2nd ed. New York: Pergamon Press, 1984.

Goldstein, Arnold P., et al. *Skillstreaming.* Champaign, IL: Research Press.

Guare, R. *Head Injury Rehabilitation: Managing Attention Deficits.* Houston, TX: HDI Publishers, 1988.

Horton, A.M. *Behavioral Interventions with Brain-Injured Children.* New York: Plenum Press, 1994.

Kaplan, Joseph S., with Barbara Drainville. *Beyond Behavior Modification: A Cognitive-Behavioral Approach to Behavior Management in School.* Austin, TX: Pro-ed, 1991.

Levin, H.S., H.M. Eisenberg, and A.L. Benton. *Mild Head Injury*. New York: Oxford University Press, 1989.

Silver, J., S. Yudofsky, and R. Hales. *Neuropsychiatry of Traumatic Brain Injury.* Washington, DC: American Psychiatric Press, Inc., 1994.

Walker, Hill M., Geoff Colvin, and Elizabeth Ramsey. *Antisocial Behavior in School: Strategies and Best Practices.* Pacific Grove, CA: Brooks/Cole Publishing, 1995.

Walker, James E., and Thomas M. Shea. *Behavior Management: A Practical Approach for Educators*. 6th ed. Englewood Cliffs, NJ: Prentice-Hall, 1995.

Wesolowski, M. *Head Injury Rehabilitation: Managing Anger and Aggression*. Houston, TX: HDI Publishers, 1988.

Wesolowski, M. *Head Injury Rehabilitation: Developing Self Control.* Houston, TX: HDI Publishers, 1988.

Ylvisaker, M. *Head Injury Rehabilitation: Head Injury Rehabilitation with Children and Adolescents.* Houston, TX: HDI Publishers, 1988.

Providing Therapy

Montgomery, Jacqueline, Ed. *Physical Therapy for Traumatic Brain Injury.* New York, NY: Churchill Livingstone, 1995.

Family

Burke, W., M. Wesolowski, and W. Blackerby. *The Professional Series on Traumatic Brain Injury.* Houston: HDI Publishers, 1988.

Colorado Head Injury Foundation. *A Regional Family Guide to Traumatic Brain Injury.* Colorado Head and Injury Foundation, 1991.

In Contact. Newsletter of Midwest Regional Head Injury Center for Rehabilitation and Prevention, Rehabilitation Institute of Chicago, 345 East Superior Street, Chicago, IL 60611.

Families Living with Brain Injury. Videotape. University Hospital School, Iowa.

Griffith, E.R., and S. Lemberg. *Sexuality and the Person with Traumatic Brain Injury: A Guide for Families.* Philadelphia: F.A. Davis Company, 1993.

Gronwall, D., P. Wrightson, and P. Waddell. *Head Injury-the Facts: A Guide for Families and Care-givers.* Oxford: University Press, 1993.

Johnson, David A., David Uttley, and Marie Wike. *Children's Head Injury: Who Cares?* Bristol, PA: Taylor and Francis, Inc., 1989.

Lash, Marilyn. *When Your Child Goes to School after an Injury.* Boston, MA: Exceptional Parent, 1992.

__________. *When Your Child is Seriously Injured: The Emotional Impact on Families.* Boston, MA: Research and Training Center in Rehabilitation and Childhood Trauma, 1991.

Leaf, Leife. "Traumatic Brain Injury: Affecting Family Recovery." *Brain Injury* 7 (1993), pp. 543-546.

Lehr, Ellen. *Psychological Management of Traumatic Brain Injuries in Children and Adolescents.* Rockville, MD: Aspen Publications, 1990.

Mathis, Melody. "Personal Needs of Family Members of Critically Ill Patients with and without Acute Brain Injury." *Journal of Neurosurgical Surgery* 16 (1984), pp. 36-44.

Palfrey, J.S., et al. *Working Toward a Balance in Our Lives: A Booklet for Families of Children with Disabilities and Special Health Care Needs.* Boston: Project School Care, 1992.

Raines, Shanan, and Pamela Waaland. *For Kids Only: A Guide to Brain Injury.* Richmond, VA: Medical College of Virginia, not dated.

Rosenthal, Mitchell, et al. *Rehabilitation of the Adult and Child with Traumatic Brain Injury.* 2nd ed. Philadelphia, PA: F.A. Davis Co., 1983.

Senelick, R.C., and C. E. Ryan. *Living with Head Injury: A Guide for Families.* Washington, D.C.: Rehab Medical Services Corporation, 1991.

Waaland, Pamela, and Jeffry S. Kreutzer. "Family Response to Childhood Traumatic Brain Injury." *The Journal of Head Trauma Rehabilitation.* 3.4 (1988), pp. 51-63.

Wells, E., et al. *Paying the Bills: Tips for Families on Financing Health Care for Children with Special Needs.* Boston: New England SERVE, 1992.

Williams, Janet M., and Thomas Kay, Eds. *Head Injury: A Family Matter.* Baltimore: Paul Brookes Publishing Co., 1991.

Prevention

Barth, J. "Mild Head Injury" In *National Athletic Trainers' Association Research and Education Foundation Proceedings: Mild Brain Injury in Sports Summit.* Washington, DC, April 16-18, 1994, pp. 12-17.

Begali, V. *Head Injury in Children and Adolescents: A Resource and Review for School and Allied Professionals.* 2nd ed. Brandon, VT: Clinical Psychology Publishing Co., 1992.

ETR Associates. *Preventing Injury: A Safety Curriculum.* Santa Cruz, CA.

Golden, C. *Diagnosis and Rehabilitation in Clinical Neuropsychology.* Springfield, IL: Charles Thomas Publishers, 1981.

Hatten, J. "Involving Survivors of Acquired Brain Injury in Injury Prevention Work." *Journal of Head Trauma Rehabilitation* 6(2), June 1991, pp. 71-75.

Humphreys, R. "Patterns of Pediatric Brain Injury" In *Neurotrauma: Three Treatment, Rehabilitation and Related Issues.* Eds. M. Miner, and K. Wagner. Boston: Butterworths, 1989, pp. 115-26.

Kelly, J., and C. Filley. "Traumatic Brain Injury in Children." In *Analysis, Understanding and Presentation of Cases Involving Traumatic Brain Injury.* Ed. C. Simkins. Washington, DC: National Head Injury Foundation, 1994, pp. 37-52.

Lehr, E. *Psychological Management of Traumatic Brain Injuries in Children and Adolescents.* Rockville, MD: Aspen Publishers, Inc., 1990.

Max, W., E. MacKenzie, and D. Rice. "Head Injuries: Costs and Consequences." *The Journal of Head Trauma Rehabilitation.* 6(2), June 1991, pp. 76-91.

The Midwest Regional Head Injury Center for Rehabilitation and Prevention. *Region V Directory of Programs to Prevent Traumatic Brain Injury*, 1994. Chicago, IL: The Rehabilitation Institute of Chicago Education and Training Center, 1994.

Romano, P., and E. McLoughlin. "Helmet Use and Fatal Motorcycle Injuries in California 1987-1988." *Journal of Head Trauma Rehabilitation* 6(2), June 1991, pp. 21-37.

General

Tyler, Janet Siantz. *Traumatic Head Injury in School Aged Children: A Training Manual for Educational Personnel.* Kansas City, KS: University of Kansas Medical Center, 1996.

University of the State of New York. *Traumatic Brain Injury: A Guidebook for Educators.* Albany, NY.

Florida Department of Education. *What We Know About Educating Students with Traumatic Brain Injury.* Tallahassee, FL: Florida Department of Education, 1993.

Oregon Department of Education. *Traumatic Brain Injury: An Educator's Manual.* Salem, OR: Oregon Department of Education, 1991.

Organizations

Brain Injury Association of Wisconsin
735 N. Water St., #701
Milwaukee, WI 53202
(414) 271-7463
(800) 882-9282

Brain Injury Association of Wisconsin Fox Valley

St. Elizabeth Hospital
1506 S. Oneida St.
Appleton, WI 54915
(414) 738-2872 Dr. Kristen Henke

Theda Clark
130 2nd St.
Neenah, WI 54957
(414) 729-2105 Candace Pantzlaff

Brain Injury Association of Wisconsin Indianhead

Amery/New Richmond
(715) 294-4320 Milda Anderson
(715) 246-6242 Carolyn Craig

Ashland
North County Independent Living
(715) 392-9118 Jill Nyberg
Park Falls and Price County
(715) 339-2158 Ginnie Riley

Lakeview Medical Center Conference Room
1100 N. Main St.
Rice Lake, WI 54868
(715) 234-4087 Corinne and Jim Richie

Brain Injury Association of Wisconsin Big River

LaCrosse Lutheran Hospital
1910 South Ave.
LaCrosse, WI 54601
(608) 785-0530

St. Francis Medical Center
600 West Ave. South
LaCrosse, WI 54601
Janet Papenfuss (608) 785-0940

Brain Injury Association of Wisconsin Madison Area

Mercy Hospital
1000 Mineral Point Ave., Rm. 4114
Janesville, WI 53545
(608) 884-4885 Helen Grandt
(608) 752-7183 Kay Schmaling

Madison
Meriter Hospital
202 S. Park St.
Madison, WI 53715
(608) 271-9387 Gary Jackson

Mild Head Injury Group
Meriter Hospital
10th Floor-Heart Center Mtg. Room
(608) 276-9754 Chari Haglin
(608) 233-6646 Pat Grillot

Brain Injury Association of Wisconsin Northwest

Eau Claire Self-Help
Sacred Heart Hospital
900 West Clairemont
Eau Claire, WI 54701
(715) 839-4392 Larry Bandoli
(715) 874-6400 Audrey Nelson

Brain Injury Association of Wisconsin Milwaukee Area

Milwaukee Area Self-Help
West Milwaukee Community Centre
1345 S. 47th St.
Milwaukee, WI 53219
(414) 762-5760 Joanne Galewald
(414) 257-5430 Elke Kurpiers

Mild Head Injury Group
Sacred Heart Rehabilitation Institute
1545 S. Layton Blvd.
Milwaukee, WI 53215
(414) 383-4490 Cindy Sellon
(414) 383-4490 Tom Fisher

Brain Injury Association of Wisconsin Northeast

Brown County
Curative Workshop
2900 Curry Ln.
Green Bay, WI 54308
(414) 468-1161 ext. 202 Jan Bast
(414) 468-1161 ext. 195 Kay Allen
Oconto County
(414) 834-7000 Michelle Olson

Brain Injury Association of Wisconsin Waukesha
Waukesha Memorial Hospital
725 American Ave.
Occupational Therapy Dept.
Waukesha, WI 53188
(414) 544-2445

Brain Injury Association, Inc.
1776 Massachusetts Ave., NW, Ste. 100
Washington, D.C. 20036
(202) 296-6443

Self-help and Support Groups

Monroe
(608) 862-3652 Val Roberts

Manitowoc
(414) 683-3285 Joe Mader

Western Racine/Waterford
(414) 886-2696 Veda Val Allen

Racine
Alpha Homes of Wisconsin
6216 Washington Ave., Ste. D
Racine, WI
(414) 886-3328 Betty Brown

Stevens Point
Portage County Public Library
1001 Main St.
Stevens Point, WI
(715) 344-4563 Christianah Olatunji

Marshfield
Marshfield Clinic-Lawton Center
1000 N. Oak St.
(715) 387-5366 Mike Graper
(715) 387-0481 Sally Jo Lee

Dodge County
Dodge County Community Health Center
199 Home Rd. Health Center Conf. Room
(414) 386-3576 Mary Ann LaPine

Fond du Lac/TLC
Advocaps, Inc.
19 W. First St.
(414) 922-7760 Steven O'Connor

Tri-County Plus
Nicolet College Science Center
2nd Floor, Rm. 200
Rhinelander, WI
(715) 362-2665 Sharon Hohman

Sheboygan
Sheboygan Memorial Medical Center
2629 N. 7th St.
(414) 452-8558 Chris Koleno

Wausau
Wausau Hospital
333 Pine Ridge Blvd.
(715) 847-2450 Ann Juliot

Building Friendships Project
Teaching Research
99 W. 10th Ave., Ste. 337C
Eugene, Oregon 97401

State Agencies

Department of Administration
State Section 504 Coordinator
101 S. Webster St.
P.O. Box 7864
Madison, WI 53707
(608) 266-0411

Department of Health and Social Services
Division of Community Services
P.O. Box 7851
Madison, WI 53707-7851
(608) 267-9840 Brain Injury
(608) 266-7469 Family Support
(608) 266-7469 Katie Beckett

Council on Developmental Disabilities
722 Williamson St.
P.O. Box 7851
Madison, WI 53707-7851
(608) 266-7826

Wisconsin Technical College System
Thomas Heffron
Consultant, Special Services
310 Price Pl.
P.O. Box 7874
Madison, WI 53707
(608) 266-3738

Wisconsin Occupational Therapy Association (WOTA)
4465 North Oakland Ave.
Shorewood, WI 53211
(414) 962-9655
(800) 728-1992

Wisconsin Physical Therapy Association (WPTA)
2800 Royal Ave., Ste. 206C
Madison, WI 53713
(608) 221-9191
(703) 221-9697 (Fax)

Department of Health & Social Services
Division of Health
Program for Children with Special Health Care Needs (formerly BCPN)
1400 E. Washington Ave.
Madison, WI 53703
(800) 441-4576

Department of Public Instruction
State Superintendent
125 S. Webster St.
P.O. Box 7841
Madison, WI 53707-7841
(608) 266-1771

Division for Learning Support: Equity and Advocacy
Assistant State Superintendent
125 S. Webster St.
P.O. Box 7841
Madison, WI 53707-7841
(608) 266-1649
(608) 267-2427 (TDD)

Waisman Center on Mental Retardation and Human Development
1500 Highland Ave.
Madison, WI 53705-2280
(608) 263-5776

Wisconsin Department of Transportation
4802 Sheboygan Ave.
Madison, WI 53707

Agencies for the Deaf and Hard of Hearing

Alexander Graham Bell Association for the Deaf
Wisconsin Chapter
Barbara Goetz, President
1825 E. Olive St.
Shorewood, WI 53211
(414) 963-4086

Center for the Deaf and Hard of Hearing
3505 N. 124th St.
Brookfield, WI 53005
(414) 790-1040

Northcentral Technical College
Program for the Deaf and Hard of Hearing
1000 W. Campus Dr.
Wausau, WI 54401
(715) 675-3331

Office for the Deaf and Hard of Hearing
Central Office
2917 International Ln.
Madison, WI 53707-7852
(608) 243-5717 (TTY)
(608) 243-5625 (voice)

Outreach Program
Wisconsin School for the Deaf
309 W. Walaith Ave.
Delavan, WI 53115
(414) 728-7127 Joy Lee

University of Wisconsin-Milwaukee
Endres Hall 6th Floor
P.O. Box 413
Milwaukee, WI 53201
(414) 229-6567 Joanne Vandenbusch
Trinka Messenheimer-Young

Wisconsin Association for the Deaf
8142 Beechwood Ave.
Milwaukee, WI 53223
(414) 358-0668 (TDD only)

Wisconsin Association for the Deaf
Karen Disho, President
3839 Hwy 22
Rio, WI 53960
(414) 992-5386 (voice, TDD)

Regional Offices of the Deaf and Hard of Hearing

Southern Regional Office (Region I)
5005 University Ave.
Madison, WI 53705
(608) 267-3800 (voice, TTY)
(608) 267-4329 (TTY)

Southeastern Regional Office (Region II)
141 Northwest Barstow
P.O. Box 1258
Waukesha, WI 53187
(414) 521-5128 (voice)
(414) 521-5858 (TTY)

Milwaukee Regional Office (Region III)
555 W. Layton Ave., #430
Milwaukee, WI 53207
(414) 769-5709 (TTY)

Eastern Regional Office (Region IV)
200 N. Jefferson, Ste. 311
Green Bay, WI 54301-5191
(414) 448-5294 (voice, TTY)
(414) 448-5295 (TTY)

Western Regional Office (Region V)
517 E. Clairemont Ave.
Eau Claire, WI 54701-6479
(715) 836-2062 (voice, TTY)
(715) 836-2075 (voice, TTY)

Northern Regional Office (Region VI)
2416 Stewart Square
Wausau, WI 54401
(715) 842-7693 (voice)
(715) 845-5554 (TTY)

Division of Care and Treatment Facilities
Central Wisconsin Center for the
Developmentally Disabled
Library Information Center
317 Knutson Dr.
Madison, WI 53704
(608) 249-2151, ext. 327

Agencies for the Visually Impaired

Outreach Services from the Educational
Services Center for the Visually Impaired
1700 W. State St.
Janesville, WI 53546
(800) 832-9784

Recordings for the Blind
20 Roszel Rd.
Princeton, New Jersey 08540
(800) 221-4792

Volunteer Braillists & Tapists, Inc.
517 N. Segoe Rd., #200
Madison, WI 53705
(608) 233-0222

Wisconsin Council of the Blind
354 W. Main St.
Madison, WI 53703
(608) 255-1166
(800) 783-5213

Wisconsin Association of Parents of
the Visually Impaired
6323 Pleasant Hill Dr.
West Bend, WI 53095
(414) 675-2575

Wisconsin Regional Library for the Blind and
Physically Handicapped
813 W. Wells St.
Milwaukee, WI 53233
(800) 242-8822

Associated Agencies

Ch.A.D.D. (Children with Attention Deficit Disorder)
JoAnne Evans, National President
625 Shoreline Ct.
Eau Claire, WI 54703
(715) 834-9781

Easter Seal Society of Wisconsin
101 Nob Hill Rd.
Madison, WI 53713
(608) 277-8288

Easter Seal Society of Milwaukee County
3090 N. 53rd St.
Milwaukee, WI 53210
(414) 871-1270

Easter Seal Society of Greater Milwaukee
1545 S. Layton Blvd., Rm. 516
Milwaukee, WI 53215
(414) 384-4022

Parent Education Project
2001 W. Vliet St.
Milwaukee, WI 53205
(414) 937-8380
(414) 272-1077 (TDD)
(800) 231-8382

United Cerebral Palsy of Wisconsin
c/o UCP of South Central Wisconsin
205 N. Main St., #106
Janesville, WI 53545
(800) 924-6218

United Cerebral Palsy of Greater Dane County
1502 Greenway Cross
Madison, WI 53713
(608) 273-4434

Wisconsin Association of Family and Children's Agencies
315 Wisconsin Ave.
Madison, WI 53703
(608) 257-5939

Wisconsin Coalition for Advocacy
16 N. Carroll St., Ste. 400
Madison, WI 53703
(608) 267-0214

Wisconsin Epilepsy Association
6400 Gisholt Dr., Ste. 210
Madison, WI 53713
(608) 221-1210

Wisconsin Family Ties
16 N. Carroll St., #705
Madison, WI 53703
(800) 422-7145 (outside Madison only)
(608) 267-6888

Wisconsin Head Start–Resource Access Project
Portage Office, CESA #5
626 E. Slifer St.
P.O. Box 564
Portage, WI 53901
(608) 742-8811 ext. 233

Wisconsin Speech-Language-Hearing Association
P.O. Box 1109
Madison, WI 53701-1109
(608) 283-5489
(800) 545-0640

Agencies within Universities

UW-Eau Claire
Office of Services for Students with Disabilities
Schofield Hall, Rm. 240
Eau Claire, WI 54701
(715) 836-4542 Joe Hirsch

UW-Green Bay
Educational Support Services for Students with Disabilities
2420 Nicolet Dr.
Green Bay, WI 54311
(414) 465-2671 Beth MacNeille

UW-LaCrosse
Student Support Services
Wilder Hall, Rm. 109
La Crosse, WI 54601
(608) 785-8535, ext. 8535 June Reinert

UW-Madison
McBurney Disability Resource Center
905 University Ave., Rm. 130
Madison, WI 53715-1005
(608) 263-2741 Trey Duffy

UW-Millwaukee
Accessibility Center for Students with Disabilities
Mitchell Hall, Rm. 116
P.O. Box 232
Milwaukee, WI 53211
(414) 229-6287 Carol
(414) 229-5660 Betty

UW-Oshkosh
Center for Students with Disabilities
Dempsy Hall
800 Algoma Blvd.
Oshkosh, WI 54901
(414) 424-3100 Doug McLean

UW-Parkside
Disabilities Services
900 Wood Rd.
Kenosha, WI 53141-2000
(414) 595-2610 Renee Sartin Kirby

UW-Platteville
Special Education Services
451 Gardner Hall
Platteville, WI 53818
(608) 342-1816 Bernie Berhardt

UW-River Falls
Counseling Center
River Falls, WI 54022
(715) 346-3365 Dr. John Hanann

UW-Stout
Vocational Development Center/ Service for Disabled Students
Menomonie, WI 54751
(715) 232-1216 Karen Hodgson

UW-Whitewater
Disabled Services
Roseman Hall, Rm. 1004
Whitewater, WI 53190
(414) 475-4711 John Truesdale

Independent Living Centers

Access to Independence
1310 Mendota St.
Madison, WI 53714
(608) 242-8484
(800) 362-9877

Independence First
600 W. Virginia St.
Milwaukee, WI 53204-1516
(414) 291-7520

Independent Living Program
Curative Workshop Rehab. Program
P.O. Box 8027
Green Bay, WI 54308
(414) 468-1161 (Voice/TTY)
(414) 738-2587 Appleton

Society's Assets
5200 Washington Ave., #225
Racine, WI 53406
(414) 637-9128 (Voice/TTY)
(800) 378-9128
(414) 657-3999 Kenosha
(800) 317-3999
(414) 723-8181 Elkhorn
(800) 261-8181
(608) 833-3898 (TRS Relay Service)
(800) 947-3529

Great Rivers Independent
Living Services, Inc.
Shelby Mall
4328 Morman Coulee Rd.
LaCrosse, WI 54601-4018
(608) 787-1111
(800) 987-3775

North Country Independent Living Center
2231 Catlin Ave.
P.O. Box 1245
Superior, WI 54880
(715) 392-9118 (Voice/TTY)
(800) 324-1220
(715) 682-5676 Ashland
(800) 499-5676

North Central Wisconsin Independent Living
Services, Inc.
1710 W. Stewart Ave.
Wausau, WI 54401
(715) 842-4805 (Voice)
(800) 644-4805
(715) 362-2665 Rhinelander

Center for Independent Living for Western
Wisconsin
UW-Stout
Menomonie, WI 54751
(715) 232-2150 (Voice/TTY)
(800) 228-3287

Agencies for Vocational Rehabilitation

Central Administration
2917 International Ln.
Madison, WI 53704
(608) 243-5600

Governor's Committee for People with Disabilities
1 W. Wilson St.
P.O. Box 7852
Madison, WI 53707
(800) 362-1290
(608) 267-5016

Client Assistance Program (CAP)
1 W. Wilson St.
P.O. Box 7852
Madison, WI 53707
(800) 362-1290
(608) 267-5016
(608) 267-2082

Eau Claire
P.O. Box 1228
517 Clairemont Ave.
Eau Claire, WI 54701-6479
(715) 836-4263 (Voice/TTY)
Counties served: Chippewa, Clark, Dunn, Eau Claire, Pepin, Pierce, St. Croix.

Fond du Lac
P.O. Box 1438
820 S. Main Street
Fond du Lac, WI 57038
(414) 929-2924
(414) 929-3972 (TTY)
Counties served: Calumet, Dodge, Fond du Lac, Green Lake, Marquette.

Green Bay
200 N. Jefferson St., Ste. 311
Green Bay, WI 54301-5197
(414) 436-3417
(414) 436-4179 (TDD)
Counties served: Brown, Door, Kewaunee, Marinette, Menominee, Oconto, Shawano.

Janesville
514 S. Main St.
Janesville, WI 53545-4800
(608) 758-6200 (Voice/TTY)
Counties served: Green, Rock.

Kenosha
712 55th St.
Kenosha, WI 53140-3690
(414) 656-6453
(414) 656-6834 (TTY)
Counties served: Kenosha, Walworth.

LaCrosse
33 Buchner Pl., Wing B
La Crosse, WI 54603-3122
(608) 785-9500
(608) 785-9530 (TTY)
Counties served: Buffalo, Crawford, Jackson, La Crosse, Monroe, Trempealeau, Vernon.

Madison East
600 Williamson St., Ste. F
Madison, WI 53703-4500
(608) 266-3655; TTY: (608) 267-7772
County served: Dane.

Madison West
5005 University Ave., Ste. 2
Madison, WI 53705-5415
(608) 266-4541
(608) 267-2090 (TTY)
Counties served: Columbia, Grant, Iowa, Jefferson, LaFayette, Richland, Sauk.

Milwaukee Northeast
120 E. Capitol Dr., Ste. 300
Milwaukee, WI 53212-9990
(414) 229-0300
(414) 229-0307 (TTY)
County served: Milwaukee, Northeast Sector.

Milwaukee Northwest
6815 W. Capitol Dr.
Milwaukee, WI 53216-2096
(414) 438-4860
(414) 438-4869 (TTY)
County served: Milwaukee, Northwest Sector.

Milwaukee Southeast
3501 S. Howell Ave.
Milwaukee, WI 53207-3321
(414) 769-2600
(414) 769-2604 (TTY)
County Served: Milwaukee, Southeast Sector.

Milwaukee Southwest
9401 W. Beloit Rd., Rm. 408
West Allis, WI 53227-4380
(414) 546-8340
(414) 546-8353 (TTY)
County served: Milwaukee, Southwest Sector.

Oshkosh
303 Pearl Ave., Ste. E
Oshkosh, WI 54901-4737
(414) 424-2028; TTY: (414) 424-2053
Counties served: Outagamie, Waupaca,
Waushara, Winnebago.

Racine
5200 Washington Ave.
Racine, WI 53406-3388
(414)636-3388
(414) 636-3900 (TTY)
County served: Racine.

Rhinelander
P.O. Box 894
158 S. Anderson St.
Rhinelander, WI 54501
(715) 369-3930 (Voice/TDD)
Counties served: Florence, Forest, Langlade,
Lincoln, Oneida, Vilas.

Rice Lake
11 E. Eau Claire St., Ste. 107
Rice Lake, WI 54868-1766
(715) 234-6806 (Voice/TDD)
Counties served: Barron, Burnett, Polk, Rusk,
Washburn.

Sheboygan
1428 N. 5th St.
Sheboygan, WI 53081-3548
(414) 459-3883
(414) 459-3576 (TTY)
Counties served: Manitowoc, Sheboygan.

Superior
1330 Tower Ave.
Superior, WI 54880-1525
(715) 392-7896
(715) 392-7908 (TTY)
Counties served: Ashland, Bayfield, Douglas,
Iron, Price, Sawyer.

Waukesha
141 NW Barstow St., Rm. 157
Waukesha, WI 53187-1349
(414) 548-5850
(414) 548-5853 (TDD)
Counties served: Ozaukee, Washington,
Waukesha.

Wausau
2416 Stewart Square
Wausau, WI 54401-4183
(715) 845-9261
(715) 845-5554 (TTY)
Counties served: Marathon, Taylor.

Wisconsin Rapids
2810 Ninth St. South
Wisconsin Rapids, WI 54494-6335
(715) 422-1100
(715) 422-1669 (TTY)
Counties served: Adams, Juneau, Portage,
Wood.

DVR Special Services Unit
5316 W. State St.
Milwaukee, WI 53208-2686
(414) 778-5803 (Voice/TTY)

Wisconsin Division of Community Services
First Step
(800) 642-7837
For intervention services for children 0-6 years.

County Agencies

Adams County
Health & Social Services
108 E. North St.
P.O. Box 500
Friendship, WI 53934-0500
(608) 339-3356

Unified Board
108 E. North St.
P.O. Box 619
Friendship, WI 53934-0619
(608) 339-7881

Ashland County
Human Services Department
301 Ellis Ave.
Ashland, WI 54806-3901
(715) 682-7004

Barron County
Department of Social Services
330 E. LaSalle Ave.
Barron, WI 54812
(715) 537-5691

Northern Pines Unified Services Center
1160 8th Ave.
P.O. Box 518
Cumberland, WI 54829
(715) 822-4747

Bayfield County
Department of Social Services
P.O. Box 308
Washburn, WI 54891
(715) 373-6127

Dept. of Community Programs
Courthouse
P.O. Box 276
Washburn, WI 54891
(715) 373-6133

Brown County
Human Services Department
111 N. Jefferson St.
Green Bay, WI 54301
(414) 448-6000

Buffalo County
Department of Human Services
407 S. Second Ave.
Alma, WI 54610-0517
(608) 685-4412

Burnett County
Department of Social Services
7410 Co. Rd. K#130
Siren, WI 54872
(715) 349-2131

Northern Pines Unified Services Center
1160 8th Ave.
P.O. Box 518
Cumberland, WI 54829
(715) 822-4747

Calumet County
Department of Human Services
206 Court St.
Chilton, WI 53014
(414) 849-1400

Chippewa County
Human Services Department
711 N. Bridge St.
Chippewa Falls, WI 54729
(715) 726-7799

Clark County
Department of Social Services
517 Court Street Room 503
Neillsville, WI 54456
(715) 743-5233

Community Services
513 Court St., Rm. 503
Neillsville, WI 54456-1971
(715) 743-5191

Columbia County
Human Services Department
711 E. Cook St.
Portage, WI 53901
(608) 742-9227

Crawford County
Human Services Department
111 W. Dunn St.
Prairie du Chien, WI 53821
(608) 326-0248

Dane County
Department of Human Services
1202 Northport Dr.
Madison, WI 53704
(608) 242-6200

Dodge County
Human Services & Health Dept.
143 E. Center St.
Juneau, WI 53039
(414) 386-3750

Door County
Department of Social Services
421 Nebraska St.
Sturgeon Bay, WI 54235
(414) 746-2300

Unified Board
421 Nebraska St.
Sturgeon Bay, WI 54235
(414) 743-7216

Douglas County
Human Services
1313 Belknap St.
Superior, WI 54880
(715) 393-0304

Dunn County
Department of Human Services
808 Main St.
Menomonie, WI 54751
(715) 232-1116

Eau Claire County
Department of Human Services
202 Eau Claire St.
P.O. Box 840
Eau Claire, WI 54702
(715) 833-1977

Florence County
Human Services Department
Courthouse
P.O. Box 170
Florence, WI 54121
(715) 528-3296

Fond du Lac County
Department of Social Services
87 Vincent St.
P.O. Box 1196
Fond du Lac, WI 54936-1196
(414) 929-3400

Dept. of Community Programs
459 E. First St.
Fond du Lac, WI 54935
(414) 929-3500

Forest County
Social Services Department
200 E. Madison St.
Crandon, WI 54520
(715) 478-3351

Human Service Center
705 E. Timber
P.O. Box 897
Rhinelander, WI 54501-0897
(715) 369-2215

Grant County
Department of Social Services
8820 Hwy 35 & 81 South
P.O. Box 111
Lancaster, WI 53813
(608) 723-2136

Unified Board
P.O. Box 230
Lancaster, WI 53813
(608) 723-6357

Green County
Human Services
Pleasant View Complex Box 216
Monroe, WI 53566
(608) 328-9393

Green Lake County
Human Services Department
500 Lake Steel St.
Green Lake, WI 54941-3188
(414) 294-4070

Iowa County
Department of Social Services
109 W. Fountain St.
P.O. Box 98
Dodgeville, WI 53533
(608) 935-9311

Unified Board
P.O. Box 230
Lancaster, WI 53813
(608) 723-6357

Iron County
Department of Human Services
Courthouse
300 Taconite St.
Hurley, WI 54534
(715) 561-3636

Jackson County
Human Service Department
420 Hwy 57 West
P.O. Box 457
Black River Falls, WI 54615
(715) 284-4301

Jefferson County
Human Services Department
N3995 Annex Rd.
Jefferson, WI 53549
(414) 674-3105

Juneau County
Department of Human Services
220 E. La Crosse St.
Mauston, WI 53948
(608) 847-2400

Kenosha County
Dept. of Community Programs
912 56th St., Rm. 7
Kenosha, WI 53140
(414) 653-2788

Social Services Department
714 52nd St.
Kenosha, WI 53140
(414) 653-6500

Kewaunee County
Department of Social Services
Courthouse Annex
510 Kilbourn St.
Kewaunee, WI 54216
(414) 388-3777

Community Programs
522 Fourth St.
Algoma, WI 54201
(414) 487-5231

LaCrosse County
Human Services Department
300 N. 4th St.
La Crosse, WI 54601
(608) 785-6050

Lafayette County
Human Services
700 N. Main St.
P.O. Box 206
Darlington, WI 53530
(608) 776-4800

Langlade County
Department of Social Services
1225 Langlade Rd.
Antigo, WI 54409
(715) 627-4750

North Central Community Services
1100 Lakeview Dr.
Wausau, WI 54401
(715) 848-4600

Lincoln County
Department of Social Services
503 S. Center St.
P.O. Box 547
Merrill, WI 54452
(715) 536-6200

51.437 Services
912 Memorial Dr.
P.O. Box 710
Merrill, WI 54452-0710
(715) 536-0350

North Central Community Services
1100 Lake View Dr.
Wausau, WI 54401
(715) 848-4600

Manitowoc County
Human Services Department
926 S. 8th St.
P.O. Box 1177
Manitowoc, WI 54221-1177
(715) 683-4230

Marathon County
Department of Social Services
400 E. Thomas St.
Wausau, WI 54401-6498
(715) 847-5700

North Central Community Services
1100 Lake View Dr.
Wausau, WI 54401-6799
(715) 848-4600

Marinette County
Human Services Department
2500 Hall Ave.
Marinette, WI 54143-6086
(715) 732-7760

Marquette County
Department of Social Services
Courthouse
P.O. Box 405
(608) 297-9135
Montello, WI 53949

Unified Services Board
Courthouse
P.O. Box 274
Montello, WI 53949
(608) 297-9151

Menominee County
Human Services Department
P.O. Box 280
Keshena, WI 54135
(715) 799-3861

Milwaukee County
Social Services Department
235 W. Galena St.
Milwaukee, WI 53212
(414) 289-6816

Combined Community Services Board
235 W. Galena St., Ste. 270
Milwaukee, WI 53212
(414) 289-6660

Monroe County
Department of Human Services
Community Services Center
Rte. 2, Bldg. A
Sparta, WI 54656
(608) 269-8600

Northern Pines Unified Services Center
1160 8th Ave.
P.O. Box 518
Cumberland, WI 54829
(715) 822-4747

Oconto County
Department of Human Services
501 Park Ave.
Oconto, WI 54153
(414) 834-7000

Oneida County
Department of Social Services
Oneida County Courthouse
P.O. Box 400
Rhinelander, WI 54501
(715) 362-5695

Human Service Center
705 E. Timber
P.O. Box 897
Rhinelander, WI 54501-0891
(715) 369-2215

Outagamie County
Department of Human Services
401 S. Elm St.
Appleton, WI 54911
(414) 832-5457

Ozaukee County
Department of Social Services
121 W. Main St.
Port Washington, WI 53074
(414) 284-8200

Department of Community Programs
121 W. Main St.
Port Washington, WI 53074
(414) 238-8127

Pepin County
Department of Human Services
740 7th Ave W.
P.O. Box 39
Durand, WI 54736
(715) 672-8941

Pierce County
Department of Human Services
412 W. Kinne St.
Ellsworth, WI 54011
(715) 273-3531

Polk County
Department of Social Services
300 Polk County Plaza
Balsam Lake, WI 54810
(715) 485-3133

Northern Pines Unifies Services Center
1160 8th Ave.
P.O. Box 518
Cumberland, WI 54829
(715) 822-4747

Portage County
Community Human Services
817 Whiting Ave.
Stevens Point, WI 54481
(715) 345-5350

Price County
Human Services Department
104 S. Eyder Ave.
Phillips, WI 54555
(715) 339-2158

Racine County
Human Services Department
207 Seventh St.
Racine, WI 53403
(414) 636-3671

Richland County
Department of Social Services
250 S. Main St.
P.O. Box 673
Richland Center, WI 53581
(608) 647-8821

Community Programs
1000 Hwy 14 West
Richland Center, WI 53581
(608) 647-6384

Rock County
Department of Human Services
Hwy 51 North
P.O. Box 1649
Janesville, WI 53547-1649
(608) 757-5200

Developmental Disabilities Board
P.O. Box 1867
Janesville, WI 53547-1867
(608) 757-5050

Rusk County
Department of Social Services
Courthouse
311 E. Miner Ave.
Ladysmith, WI 54848
(715) 532-2116

St. Croix County
Human Services Department
1445 N Fourth St.
New Richmond, WI 54017
(715) 246-6991

Sauk County
Department of Human Services
425 Sixth St.
P.O. Box 398
Reedsburg, WI 53959
(608) 524-4391

Sawyer County
Department of Human Services
P.O. Box 192
Hayward, WI 54843
(715) 634-4806 or (715) 634-4751

Shawano County
Department of Social Services
P.O. Box 29
Shawano, WI 54166
(715) 526-4700

Sheboygan County
Human Service Department
1011 North 8th St.
Sheboygan, WI 53081
(414) 459-3056

Taylor County
Human Services Department
540 E. College St.
Medford, WI 54451
(715) 748-3332

Trempealeau County
Department of Social Services
Courthouse
P.O. Box 67
Whitehall, WI 54773
(715) 538-2311, ext. 290

Unified Board
Courthouse
1720 Main St.
P.O. Box 67
Whitehall, WI 54773
(715) 538-2311 ext. 272

Vernon County
Department of Human Services
P.O. Box 823
Viroqua, WI 54665
(608) 637-2135

Vilas County
Social Services Department
Vilas County Courthouse
P.O. Box 369
Eagle River, WI 54521
(715) 479-3668

Human Service Center
705 E. Timber
P.O. Box 897
Rhinelander, WI 54501-0897
(715) 369-2215

Walworth County
Human Services
P.O. Box 1006
Elkhorn, WI 53121
(414) 741-3300

Washburn County
Department of Social Services
P.O. Box 250
Shell Lake, WI 54871
(715) 468-7878

Northern Pines Unified
1160 8th Ave.
P.O. Box 518
Cumberland, WI 54829
(715) 882-4747

Washington County
Comprehensive Community Services
333 E. Washington Ave., Ste. 2100
West Bend, WI 53095-2585
(414) 335-4583

Waukesha County
Community Human Services Dept.
500 Riverview Ave.
Waukesha, WI 53188
(414) 548-7666

Waupaca County
Department of Human Services
811 Harding St.
Waupaca, WI 54981-2080
(715) 258-6300

Waushara County
Department of Social Services
230 W. Park St.
P.O. Box 898
Wautoma, WI 54982
(414) 787-3303

Department of Community Programs
P.O. Box 700
Wautoma, WI 54982-0700
(414)787-4656

Winnebago County
Social Services Department
220 Washington Ave.
Oshkosh, WI 54903
(414) 236-4600

Dept. of Community Programs
220 Washington Ave.
P.O. Box 2187
Oshkosh, WI 54903-2187

Wood County
Department of Social Services
Courthouse
400 Market St.
P.O. Box 8095
Wisconsin Rapids, WI 54495-8095
(715) 421-1010

Unified Services
2611 12th St. South
P.O. Box 729
Wisconsin Rapids, WI 54494-0729
(715) 421-8800

Glossary 13

Achievement test: a test that measures what a child has already learned.

Acoustic nerve: the nerve that is responsible for hearing.

Activities of Daily Living (ADL): routine daily self care skills, including dressing, bathing, toileting, and feeding.

Adaptive physical education: a modified regular physical education program to meet the needs of students.

Ankle foot orthoses (AFO): a "brace" that stabilizes the ankle joint.

Anoxia: lack of oxygen to the brain.

Anterograde amnesia: lost recall of information from the time of the accident to the present.

Anticonvulsants: medications to prevent seizures.

Apraxia: difficulty starting, continuing, and stopping movements. May affect speech or the use of arms and legs or both. Also referred to as motor planning problems.

Assistive technology device: any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities.

Assistive technology service: any service that directly assists a child with a disability in selecting, acquiring, or using an assistive technology device, including evaluation of needs; purchasing, leasing, or providing a device; selecting, designing, fitting, customizing, adapting, applying, retaining, repairing or replacing a device; coordinating other activities with the use of the device; training or technical assistance for the child or the family and for professionals, employers, or other individuals involved with a child using a device.

Ataxia: movements characterized by incoordination, tremor, or both.

Audiology: the study of hearing and hearing disorders.

Autism: a developmental disability significantly affecting a child's social interaction and verbal and nonverbal communication, generally evident before age 3, that adversely affects learning and education performance. Other characteristics are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. The term does not apply if a child's educational performance is adversely affected because the child has an emotional disturbance.

Axons: the usually long and straight part of a neuron or nerve cell that conducts impulses away from the cell body.

Basal level: the level on a test at which all previous items are assumed passed.

Behavioral records: student records that include psychological tests, personality evaluations, records of conversations, any written statement concerning a student's behavior, achievement and ability tests, health records, and any other student records that are not progress records.

Board: the school board or board of education in charge of the schools of a school district.

Boarding homes: homes to care for nonresident students who are receiving special education programs, services, or both, five days a week.

Case manager: the person designated to coordinate the services for an individual within an agency and to collaborate with other agency providers.

Ceiling level: the level on a test at which all following items are assumed failed.

Central nervous system (CNS): the brain and spinal cord.

Cerebrospinal fluid (CSF): a colorless fluid that is produced in the brain and fills the space in the brain called the ventricles. It circulates around the brain and spinal cord.

Child: any person under the age of 21 years and, for the duration of a school term, any person who becomes 21 years old during that school term.

Child advocate: an individual who represents the parents of the child or the child.

Closed head injury: one of the two types of brain injuries. In this type of injury, the skull is not penetrated. It is the most common type of injury and often occurs from motor vehicle accidents or falls.

Cognitive disability: significantly below-average, general intellectual functioning coupled with deficiencies in adaptive behavior. This Wisconsin term is synonymous with mental retardation.

Cognitive rehabilitation: a program or specific group of activities designed to remediate disorders of memory, language, problem solving, or social skills.

Coma: unconsciousness lasting for more than a brief period of time. A state of unconsciousness where the person cannot be aroused or does not respond.

Compensatory strategies: alternate techniques or procedures used to accomplish an activity that is difficult to perform in a typical fashion.

Computerized axial tomography scan (CT or CAT scan): a series of radiographic pictures taken at different levels of the body or the brain. A scan is often done soon after a brain injury to determine whether surgery is needed. Repeat scans are done later to see how the brain is recovering.

Confabulation: making up things that really did not occur to compensate for memory loss.

Congenital injuries: injuries that are present since birth.

Contracture: a decrease in joint movement caused by shortening or tightening of muscle or connective tissue.

Contralateral control: left hemisphere of the brain controls movement on the right (contralateral) side of the body and the right hemisphere controls movement on the left side of the body.

Contracoup injury: the area of the brain opposite of the blow is injured because the brain "bounces off" the opposite side of the skull.

Contusion: a bruise.

Cooperative agreement or 66.30: a special education program operated by two or more school districts or CHCEBs, with one being the fiscal agent.

Cooperative Educational Service Agency (CESA): a service unit which serves as a link between school districts and between the local school district and the state superintendent.

Corpus callosum: a band of fibers that connects the two hemispheres of the brain and allows for rapid interhemisphere communication.

Cortical blindness: damage to the brain, typically in the parietal or occipital regions, resulting in the inability to interpret visual information. The eye and nerve pathways may be normal, but the brain cannot process the visual information. Children with cortical blindness that is due to a traumatic brain injury may recover some ability to interpret visual information.

County Handicapped Children's Education Board (CHCEB): board established by county board of supervisors to provide exceptional education services and programs.

Criterion-referenced assessments: testing that compares an individual's performance to an established measure, rather than to a normative group.

Deaf: a hearing impairment that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification, which adversely affects educational performance.

Deaf-blind: a term found in the IDEA that refers to hearing and visual impairments, the combination of which causes severe communication, developmental, and educational problems such that accommodation cannot be made in special education programs solely for deaf or blind children.

Department of Health and Social Services (DHSS): Wisconsin's state agency for health and social services.

Department of Public Instruction (DPI): Wisconsin's state education agency (SEA).

Diffuse axonal injury: a more generalized injury to the brain (versus focal) which is caused by the shearing or stretching of axons (nerve fibers) caused by acceleration or deceleration injuries, such as a motor vehicle accident.

Diplopia: seeing two images of a single object (double vision).

Director: a licensed person, appointed by the school board, responsible for the special education administrative structure, including special education and related services staff, programs, and services to students with exceptional educational needs.

Division of Learning Support: Equity and Advocacy: a division of the Wisconsin Department of Public Instruction (DPI) responsible for special education programs and services to children with exceptional educational needs and other programs and support services.

Dysarthria: a motor speech disorder caused by weakness, slowness, or incoordination of the muscles involved in speech. The severity can range from no ability to produce intelligible speech to mild articulation distortions.

Exceptional educational needs (EEN) referral: a written statement submitted to the board by any person who has reasonable cause to believe that a child is a child with exceptional educational needs.

Emotional disturbance (ED): a disability characterized by emotional, social, and behavioral functioning that significantly interferes with a student's educational program; and by deviant behavior that is severe, chronic, or frequent and that is manifested in at least two of the student's primary environments (home, school, and community).

Note: "Educational program" includes social interactions, interpersonal relationships, and personal adjustment as well as academic skills; a student can be functioning adequately in academic areas and still be identified as having an emotional disturbance.

Emotional lability: a sudden change or rapid cycling of emotional state.

Exceptional educational need (EEN): a need for special education due to a disability that is determined by a multidisciplinary team.

Executive functions: include the ability to set goals, develop a plan to reach those goals, initiate necessary activity, inhibit responses, and monitor progress toward the goals. The frontal lobe is the lobe responsible for executive functions.

Fine motor skills: activity performed by small muscle groups such as those in the hands and fingers.

Focal brain injury: an injury limited to a certain area of the brain.

Free appropriate public education (FAPE): specific education and related services at public expense, under public supervision and direction, and without charge.

Gait: walking pattern.

Gastroesophogeal reflux: stomach (gastric) contents are regurgitated back into the swallowing tube (esophagus). This can cause discomfort (heartburn) and at times cause aspiration of stomach contents into the lungs.

Glasgow Coma Scale (GCS): a measurement to estimate the severity of a coma. Used by physicians to rate levels of consciousness by assessing motor response, verbal response, and eye movement. Scores range from 15 (normal) to 3.

Gross motor skills: activity performed by large muscle groups such as those in the shoulders and hip region.

Hard of hearing: a hearing impairment, whether permanent or fluctuating, that adversely affects a child's educational performance.

Hearing or Proceeding: a public or private proceeding conducted by a local school board according to state regulation.

Hearing officer: a person appointed or hired by the school board to conduct an official hearing in special education.

Hematoma: condition when an area of tissue fills with blood.

Hemiparesis: a weakness of one side of the body.

Hemiplegia: paralysis of one side of the body.

Hemisphere: either half of the brain; right hemisphere or left hemisphere.

Herniation: movement of the brain through an opening in the lining of the brain due to increased intracranial pressure. This can cause injury to the brain because the herniated portion may not receive an adequate blood supply.

Hydrocephalus: increased fluid in the ventricles of the brain which can cause injury to the brain because of increased pressure.

Hypernasality: abnormal or excess flow of air through the nose when speaking.

Independent evaluation: educational evaluation conducted by a qualified examiner who is not employed by the agency responsible for a child's education.

Individualized education program (IEP): a plan that establishes the education program to be provided to a child with exceptional educational needs.

Individuals with Disabilities Education Act (IDEA): formerly known as the Education of the Handicapped Act and as PL 94-142, this federal special education law provides funding to states and sets procedural requirements for educational agencies.

Intracranial hemorrhage: significant bleeding in the brain.

Intracranial pressure (ICP): increased pressure within the skull, which can cause the displacement of or damage to brain tissue.

Learning disabilities (Wisconsin Statutes, Chapter 115); specific learning disability (PL 94-142): a disability that denotes severe and unique learning problems due to a disorder existing within the child that significantly interferes with the ability to acquire, organize, and express information.

Least restrictive environment (LRE): refers to the principle that to the maximum extent appropriate, a child with a disability should be educated in an environment with nondisabled peers; separate schooling and other removal from the regular environment should occur only when the nature or severity of the disability prevents education in the regular educational environment.

Left hemisphere: left half of the brain.

Local education agency (LEA): a district, CESA, or CHCEB that is responsible for the delivery of educational services and programs operated by public schools.

Magnetic resonance imaging (MRI): a diagnostic technique that produces sectional images of the human body or brain.

Mental retardation (mentally retarded, developmentally disabled): see the definition under cognitive disability. This is the federal term for cognitive disability.

Mnemonics: technique of improving memory by using a formula such as a rhyme.

Monoparesis: weakness of one limb.

Monoplegia: paralysis of one limb.

Morbidity: the sequelae (aftereffects) of a traumatic brain injury.

Mortality: death or rate of death.

Multidisciplinary team or M-team: a team appointed by the school district to evaluate a child referred for having a possible exceptional educational need.

Multidisciplinary team evaluation: evaluation materials and procedures used by an appointed group of school staff to assess the child in all areas related to a suspected disability. The multidisciplinary team determines a child's eligibility for special education based on an evaluation.

Multiple handicapped: students who have two or more disabilities.

Neuroplasticity: the ability of the brain to lay new or alternative pathways.

Neuropsychological assessment: testing that evaluates thinking and behavioral function.

Non-EEN or "non-exceptional needs": needs that are not part of special education.

Norm-referenced assessments: tests that are standardized on a defined group. An individual's performance on the test is compared to the normative group.

Occupational therapy (OT): services to individuals to improve, develop, or restore functions lost or impaired through illness, injury or deprivation, including tasks for independent functioning. Occupational therapy in schools is directed toward helping students achieve educationally related outcomes by developing underlying sensory motor, cognitive, and psychosocial skills and by collaborating on compensatory strategies and environmental adaptations when necessary.

Office for Civil Rights (OCR): office within the U.S. Department of Education responsible for implementing and enforcing the civil rights of citizens granted under the United States Constitution and federal statutes.

Office of Special Education Programs (OSEP): office within the U.S. Department of Education responsible for monitoring state and local district provision of special education programs and handling appeals from complaints based on violations of the Individuals with Disabilities Education Act (IDEA).

Orthopedically Impaired: a severe orthopedic impairment that adversely affects a child's educational performance. The term includes impairments caused by congenital anomaly (for example, clubfoot, absence of some member), impairments caused by disease (for example, poliomyelitis, bone tuberculosis), and impairments from other causes (for example, cerebral palsy, amputations, and fractures or burns that cause contractures).

Other health impaired: having limited strength, vitality, or alertness, due to chronic or acute health problems such as a heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning, leukemia, or diabetes, or acquired injuries to the brain caused by internal occurrences or degenerative conditions that adversely affect a child's educational performance.

Outcome: functional condition following an accident or injury.

Oxygen saturation: the amount of oxygen available in the blood for use by the body.

Peripheral nerve injury: injury to nerves outside of the central nervous system.

Perserveration: continued or repetitive actions, or being "stuck" on an idea.

Physical therapy (PT): services to individuals to prevent or minimize disability, develop and improve sensory and motor function, control postural deviations, and establish and maintain motor performance within the individual's capabilities. School physical therapy encompasses developing the child's gross motor and mobility skills, providing positioning and handling techniques within the educational environment, and utilizing adaptive equipment and assistive devices for the student.

Placement offer: placement of a child with exceptional educational needs in a delivery model that will carry out the child's individualized education program.

Post-traumatic amnesia (PTA): a loss of memory that occurs immediately after injury and may continue for weeks or months. During this time many patients are unable to organize or retrieve information.

Praxis: ability to perform a purposeful movement.

Premorbid status: condition prior to injury or illness.

Primary brain injury: the brain injury that occurred at the time of the accident. It may be focal, diffuse axonal, or a contracoup injury.

Program designee: person designated by the board to administer and coordinate elements of programs and services for children with exceptional educational needs.

Psychological evaluation: an assessment through the use of group or individual tests that determines the level of functioning in any of three areas 1) cognitive (how much one knows in certain areas, how one thinks) 2) affective (pertaining to feelings or emotions) 3) perceptual motor control (coordination and appropriate responses from all parts of the body).

Quadriparesis: weakness of all four limbs.

Quadriplegia: paralysis of all four limbs.

Rancho Los Amigos Scale of Cognitive Functions: One of the measures of stages of recovery following a traumatic brain injury.

Range of motion: amount of movement available at a joint. Active range of motion is performed by the individual. Passive range of motion is performed with assistance.

Related services: transportation and such developmental, corrective, and other supportive services required to assist a child with a disability to benefit from special education, and includes audiology, psychological services, physical and occupational therapy, recreation including therapeutic recreation, early identification and assessment of disabilities in children, counseling services including rehabilitation counseling, and medical services for diagnostic or evaluation purposes. The term also includes school health services, social work services in schools, and parent counseling and training.

Reevaluation: an multidisciplinary team evaluation conducted every three years (or sooner if a parent or teacher requests) for each student receiving special education.

Remote memory: events prior to the injury and early in life.

Retrograde amnesia: the inability to recall information prior to an accident that causes a brain injury. It may cover minutes, hours, weeks, months, or longer.

Right hemisphere: right half of the brain.

Scoliosis: an abnormal lateral curvature of the spine.

Secondary brain injury: secondary injuries to the brain may occur due to low blood pressure, insufficient oxygen to the brain, or elevated ICP.

Section 504 of the Rehabilitation Act of 1973 (PL 93-112): a federal statute dealing with nondiscrimination based on a handicap.

Sequelae: an outcome or behaviors that result from an accident or injury.

Shunting: turning away, diverting, or rerouting excess fluid. A shunt may be placed to prevent brain injury from hydrocephalus.

Spasticity: increased muscle tone resulting in resistance to movement.

Special education. Specially designed instruction at no additional cost to parents to meet unique individual needs of children with disabilities.

Special education screening: a process used to determine whether there is reasonable cause to believe that a child is a child with an exceptional educational need.

Specially designed physical education: specially designed instruction to meet the unique individual needs of a child with a disability in the area of physical education.

Speech and language handicap (Wisconsin Statutes, Chapter 115); speech or language impairment (IDEA): a disability characterized by a delay or deviance in acquiring prelinguistic, receptive, or expressive skills of oral communication.

Surrogate parent: a person appointed to act as a child's parent in all matters relating to special education.

Swallow studies: video of fluroscopic studies that allow the team to determine if the patient is able to swallow material safely. In moderate or severe injury, the child may have trouble coordinating a swallow, which may lead to material going into the lungs (aspiration), which can cause pneumonia.

Tactile defensiveness: being overly sensitive to touch; withdrawing, crying, yelling, or striking out when touched.

Tinnitus: ringing in the ears.

Traumatic brain injury: an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; speech and language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and executive functions, such as organizing, evaluating, and carrying out goal-directed activities. The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma.

Vertigo: the subjective sensation of moving around in space or of having objects move about the person.

Visually handicapped: students who have visual deficiencies that, even with correction, adversely affect their educational performance.

Word retrieval: the ability to name objects.